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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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METHODS FOR ESTIMATING LOSSES CAUSED BY DISEASES IN FUNGICIDE EXPERIMENTS

G. R. Townsend and J. W. Heuberger

The writers cooperated in testing a series of new fungicides on celery grown at the Everglades Experiment Station, Belle Glade, Florida, during the months of February, March, and April 1943. The fungicides were being tested for the control of celery early blight (Cercospora apii Fres.). It was believed desirable to determine the loss caused by disease by some direct means rather than to use yields alone as a criterion of the effectiveness of the fungicides, since chemicals applied to the plant may have differential effects upon growth.

The question immediately arose as to what method would be both rapid and accurate. Two methods for the rapid visual method of scoring diseased plants were available. These were the method used by Townsend (2), in which the plot as a whole is scored, for estimating early blight losses in celery, and that of Horsfall and Heuberger (1) in which the individual plants are scored separately, for estimating the amount of defoliation on tomatoes. The method of Horsfall and Heuberger could not be used in this instance since celery plants are spaced too closely for accuracy in visual scoring of individual plants. To satisfy ourselves that the method of scoring the plot as a whole is accurate, it was compared with the more laborious method of classifying all the leaves from individual plants into categories based on the amount of disease present on each leaf. This method is a modification of that used by Horsfall and Heuberger (1).

Both methods were used to score the disease on one replication of the experiment and the correlation coefficient was determined from the data. The data were sufficient for a correlation analysis since 40 plots were used.

The leaf classification method proved to be very laborious and required the services of 4 persons for approximately 6 hours. Ten plants were selected at random from each plot. The leaves were separated and classified in 6 categories indicative of the amount of blighted surface.

These categories were:

0 No blight
1 Trace of blight
2 Slight blight
3 Moderate blight
4 Severe blight
5 Leaves dead

The percentage of blighted foliage for each plot then could be be calculated by using the following formula:

Table 1. Correlation of Celery Early Blight Estimates by Scoring and Leaf Classification Methods

Plot	Percent Blight by Scoring x	Blight by Counts y	dx	dy	dx^2	dy^2	dx x dy
1	10	5.7	-26.75	-28.66	716	821	+ 767
2	20	14.8	-16.75	-19.56	281	383	+ 328
3	30	26.1	- 6.75	- 8.26	46	68	+ 56
4	50	39.9	+13.25	+ 5.54	176	31	+ 73
5	20	14.5	-16.75	-19.86	281	394	+ 333
6	20	19.9	-16.75	-14.46	281	209	+ 242
7	40	35.1	+ 3.25	+ 0.74	11	1	+ 2
8	30	26.5	- 6.75	- 7.86	46	62	+ 53
9	40	37.9	+ 3.25	+ 3.54	11	13	+ 12
10	40	38.3	+ 3.25	+ 3.94	11	16	+ 13
11	60	48.1	+23.25	+13.74	541	189	+ 319
12	60	52.1	+23.25	+17.74	541	315	+ 412
13	30	37.5	- 6.75	+ 3.14	46	10	- 21
14	50	42.9	+13.25	+ 8.54	176	73	+ 113
15	50	46.5	+13.25	+12.14	176	147	+ 161
16	50	53.9	+13.25	+19.54	176	382	+ 259
17	30	33.2	- 6.75	- 1.16	46	1	+ 8
18	50	39.7	+13.25	+ 5.34	176	29	+ 71
19	40	39.2	+ 3.25	+ 4.84	11	23	+ 16
20	50	46.7	+13.25	+12.34	176	152	+ 164
21	20	32.0	-16.75	- 2.36	281	6	+ 40
22	30	28.5	- 6.75	- 5.86	46	34	+ 40
23	40	35.6	+ 3.25	+ 1.24	11	2	+ 4
24	40	46.0	+ 3.25	+11.64	11	135	+ 38
25	20	22.1	-16.75	-12.26	281	150	+ 205
26	20	29.0	-16.75	- 5.36	281	29	+ 90
27	30	32.7	- 6.75	- 1.66	46	3	+ 11
28	40	36.8	+ 3.25	+ 2.44	11	6	+ 8
29	20	22.6	-16.75	-11.76	281	138	+ 197
30	20	23.8	-16.75	-10.56	281	112	+ 177
31	20	30.4	-16.75	- 3.96	281	16	+ 66
32	30	30.8	- 6.75	- 3.56	46	13	+ 24
33	40	29.4	+ 3.25	- 4.96	11	25	- 16
34	40	33.3	+ 3.25	- 1.06	11	1	- 3
35	50	40.1	+13.25	+ 5.74	176	33	+ 76
36	50	40.1	+13.25	+ 5.74	176	33	+ 76
37	40	35.4	+ 3.25	+ 1.04	11	1	+ 3
38	50	41.8	+13.25	+ 7.44	176	55	+ 99
39	50	40.9	+13.25	+ 6.54	176	43	+ 87
40	50	44.6	+13.25	+10.24	176	105	+ 136
	1470	1374.4	0	0	6695	4259	+ 4739
m =	36.75	34.36					

(Table 1 conc.)

$$r = \frac{(dx \times dy)}{\sqrt{(dx)^2 \times (dy)^2}} = \frac{+4739}{\sqrt{6695 \times 4259}} = \frac{+4739}{\sqrt{2,851,400}} = \frac{+4739}{5340} = +0.887$$

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} = \frac{0.887\sqrt{38}}{\sqrt{0.213}} = \frac{0.887 \times 6.16}{0.461} = \frac{5.46}{0.461} = 11.84$$

$P < 0.01$

giving odds in excess of 99:1

$$P = \frac{\text{Sum of } (n \times v)}{5N} \times 100 \quad \text{where}$$

P = Percent of blighted foliage
n = Number of leaves in each category
v = Numerical value of each category
N = Total number of leaves in sample

Dividing by 5N and multiplying by 100 gives the percentage of disease in terms of the maximum possible for the sample.

The plot socring technique is relatively simple and is much more rapid than the leaf classification method. One person can score 40 plots in less than an hour. The accuracy of this method admittedly depends upon experience. The observer who scores the plots should attempt to classify the plot as a whole as it appears upon close examination. The blight scale that was used for scoring the plots was as follows:

1	Trace of blight on lowest leaves
2	A few lesions on all lower leaves
3	Some blight on side leaves
4-5	Numerous lesions on side leaves; some dead leaves
6-8	Lower and side leaves severely blighted; some lesions on top foliage
9-10	Topmost leaves blighted; foliage becoming chlorotic; lesions on petioles

These scores can be converted to percent of diseased foliage by multiplying each by the factor 10.

Table 1 shows the data that were obtained from 40 plots by each method together with a correlation analysis for the data. That either method can be depended upon to give equivalent results is shown by the mean values of 34.36 and 36.75%, respectively, and by the high correlation coefficient ($r = +0.887$) with odds that it is highly significant.

Our conclusion is, that the rapid visual method of scoring the plot as

a whole is as accurate as more detailed methods for determining the amount of disease present. In addition, it is a great time- and labor-saver.

Literature cited

1. Horsfall, J. G., and J. W. Heuberger. Measuring magnitude of defoliation disease of tomatoes. Phytopath. 32: 226-232. 1942
2. Townsend, G. R. Spraying and dusting for the control of celery early blight in the Everglades. Florida Agr. Exp. Stat. Bull. 366. 1942.

FLORIDA AGRICULTURAL EXPERIMENT STATION

CEREAL SMUTS AND RUSTS IN ILLINOIS

L. R. Tehon and G. H. Boewe

CEREAL SMUTS ARE INCREASING -- SEED TREATMENTS ARE NEEDED: Since most Illinois farmers will use seed from their 1943 crops of wheat, oats, barley and rye to plant their 1944 crops, it will be well worth while for many of them to treat their seed for smut control. Some of the smut diseases have been increasing in Illinois for several years and in 1943 caused appreciable to severe losses in more or less extensive areas.

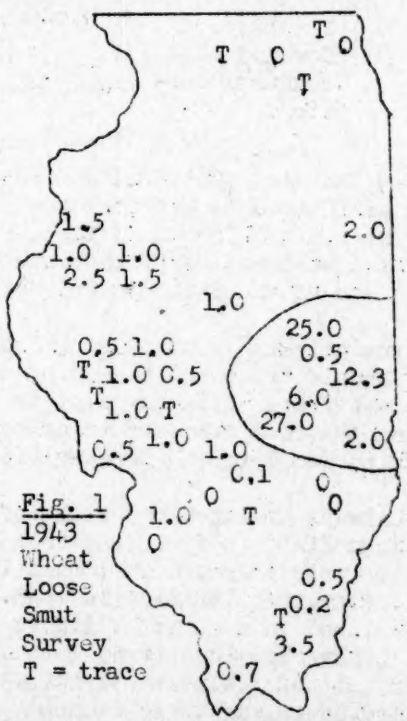

Fig. 1 1943 Wheat Loose Smut Survey T = trace

Loose Smut of Wheat [Ustilago tritici]. -- This smut, more than others, has been increasing in importance. A few years ago it could rarely be detected in amounts exceeding 1%. Usually field counts revealed such small amounts as 0.1 to 0.3%. But a gradual increase has taken place and field counts of 1% and higher are now common. The map, Figure 1, shows the percentage of smutty heads found by count in 41 fields surveyed in 1943. A rather general high level of infection appears to exist in the east central part of the State and moderate infections occur in other regions.

The amount of loose smut in next year's crop was predetermined while wheat was in bloom this year, under weather conditions favorable to infection. A further increase of loose smut can therefore be expected next year, unless seed is treated before it is planted. The only treatment that will control loose smut of wheat is hot water treatment of the seed. We suggest for this year a much more general use of this treatment.

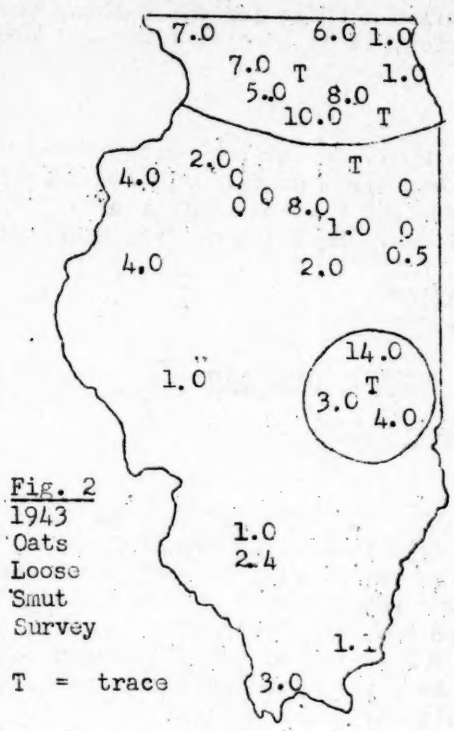

Fig. 2
1943
Oats
Loose
Smut
Survey

T = trace

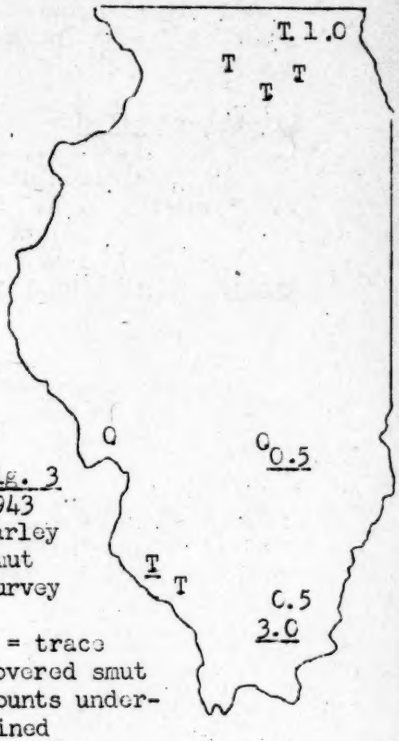

Fig. 3
1943
Barley
Smut
Survey

T = trace
Covered smut counts underlined

Stinking Smut of Wheat [Tilletia spp.]. -- Stinking smut, neither so general nor so destructive now in Illinois as 10 to 15 years ago, was found this year in only 2 of the 41 fields surveyed. In one of these fields, located in Kane County, a count of heads showed 2% of them smutty. In the other field, located at the opposite end of the State in Pulaski County, 0.9% of the heads were smutty.

Individual farmers experiencing losses from stinking smut, also those who observed it in their fields this year, should treat their seed to prevent it from appearing in greater amounts next year. Stinking smut is carried on the surface of the seed. Dusting the seed with copper carbonate or, if scab is to be controlled also, with New Improved Ceresan will prove effective.

Loose Smut of Oats [Ustilago avenae]. -- Always an important cause of loss in oats, loose smut varies in amount from field to field and from locality to locality. This year 32 oats fields were surveyed in localities shown on the map, Figure 2, and the number of smutted panicles in each was determined by sample counts. In east central and in northern Illinois losses appear to have been generally high. In various scattered localities, because of thorough seed treatment and use of resistant varieties, no loose smut could be found. For the entire State, if these random fields were typical, the 1943 loss from loose smut amounted to 4% of the crop. This compares with a similarly determined loss of 2.2% in 1942 and 2.8% in 1941.

Loose smut of oats can be controlled by various seed treatments. The "dry" formaldehyde treatment is old and well known. New Improved Ceresan and Smuttox, now generally in use, are also effective. Where possible, the use of resistant varieties recommended by the Experiment Station is advisable.

Covered Smut of Oats [Ustilago kolleri]. -- Covered smut, usually distinguishable with difficulty from loose smut in oats fields, occurs throughout the State in lesser amounts than loose smut. This year it was found in 15 of the 32 fields surveyed, in amounts ranging from a trace to 4%. The fields in which it was seen in appreciable amounts were widely scattered and not concentrated in any one region of the State. Yet, on the basis of the counts made in sample fields, a general loss of 1.9% is indicated. This is almost identical with the 2% loss of 1942. Covered smut of oats can be controlled by the treatments used for loose smut.

Loose and Covered Smuts of Barley (Figure 3). -- Loose smut [Ustilago nuda, etc.] of barley occured this year, as it usually does, throughout the State. However, it was present in unusually small amounts. The highest field count obtained was 1% and the next highest was 0.5%, the former in northeastern, the latter in southern Illinois. In other fields examined, only a trace (less than 0.1%) was found.

Covered smut [U.jensenii] of barley, not always easily distinguishable in the field from loose smut, was found this year only in the southern third of the State, the winter barley region. Although apparently spotty in distribution this year, it was important in some localities, as a 3% count obtained in one field would indicate.

Except where loose smut is known to have been severe, seed treatment with New Improved Ceresan will give control of both barley smuts. But where loose smut was heavy, only the hot water treatment will give satisfactory results.

Rye Smuts. -- In Illinois both loose smut [Ustilago tritici] and stem smut [Urocystis occulta] are known to occur from time to time. This year, neither of them was seen in any of the rye fields surveyed. Where they may have been present, seed treatment may be needed. For loose smut the hot water treatment is necessary. For stem smut dusting with copper carbonate or New Improved Ceresan will prove satisfactory.

INFORMATION REGARDING THE RUSTS ATTACKING SMALL GRAINS IN 1943: With the exception of oats crown rust, the rusts of wheat, oats, barley and rye were generally much less severe in 1943 than had been expected. The severity of these diseases is determined to a large degree by weather, and excessive rainfall in May had seemed likely to favor their development. However, subsequent high temperatures and lack of rain held them in check.

Wheat Leaf Rust [Puccinia rubigo-vera tritici]. -- Taken year after year, wheat leaf rust is the most damaging rust occurring on grains in Illinois. Every year, by harvest time, at least some leaves on every wheat plant grown in the State are infected. But the amount of leaf area taken up by rust pustules varies from year to year and from region to region, making the rust more destructive in some years, and in some regions, than in others. In 1943 leaf rust, as usual, was present on 100% of the plants in examined fields. As indicated by representative

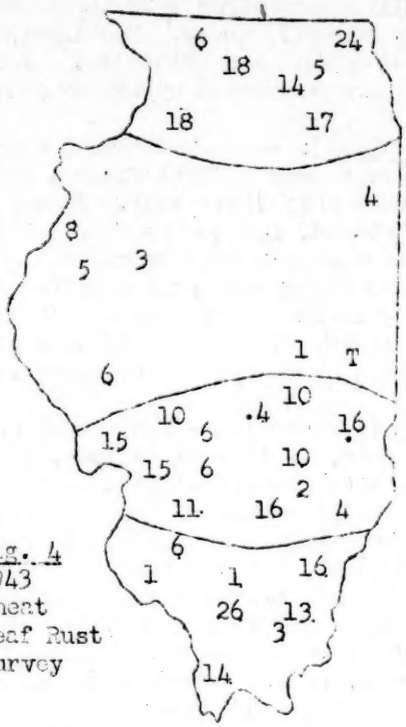

Fig. 4
1943
Wheat
Leaf Rust
Survey

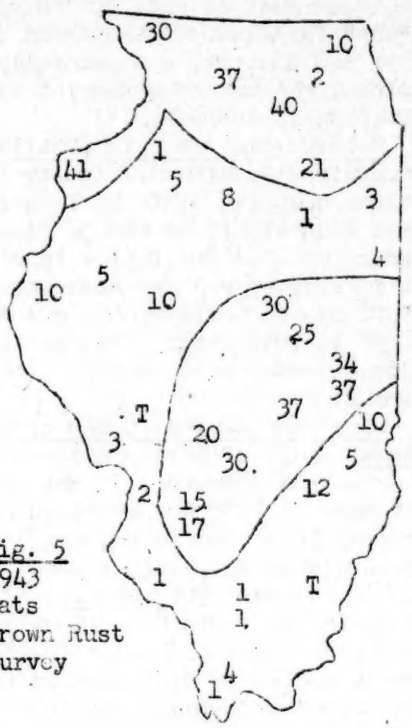

Fig. 5
1943
Oats
Crown Rust
Survey

leaf samples from these fields, leaf rust pustules destroyed, as an average for the entire State, 9.3% of the leaf area of the wheat plants. Departures from this average were considerable (see map, Figure 4) in various parts of the State. Through most of the spring wheat region in the north, leaf rust was generally heavy. In the winter wheat region, a belt just south of the middle of the State had heavier-than-average infection, and in the extreme south both heavy and light leaf rust was observed.

Wheat Stem Rust [P. graminis]. -- Through most of the State wheat stem rust was very light. In most fields from 60 to 100% of the stems had become infected by harvest time, but the stem area occupied by rust pustules was small, ranging from a trace to 0.1%. More severe infections were observed in Whiteside County, where in one field 9.7% of the stem area was occupied by rust, and in Fulton County, where in one field 8.0% of the stem area was occupied by rust. From Clinton and Washington Counties northeastward through Richland County to Clark County a band of infection prevailed that was generally higher than in the territory south and north of it. In various fields through this area, from 0.5 to 5.1% of the stem area was rust-occupied. Damage from so light an attack was probably negligible.

Oats Crown Rust [P. coronata]. -- This year, crown rust was the most abundant of the cereal rusts, outranking even wheat leaf rust. By harvest time, except in fields of resistant varieties, practically 100% of the oats plants had become infected. The severity of the attack was,

however, quite varied. In extreme northern and western counties (see map, Figure 5) fields were seen in which 30 to 40% of the leaf area on plants was rust-occupied. In an oddly shaped region reaching southwestward from the central part of the State fields were seen in which 15 to 37% of the leaf area was taken by rust pustules. Between this region and the heavily rusted region north and northwest, rust occupation of leaves was much lighter, ranging from 1 to 10%. In the extreme south crown rust was mild.

Especially in the northern part of the State the value of such oats varieties as Vicland, Boone and Marion, resistant to both crown rust and stem rust, was observed several times.

Oats Stem Rust. -- Although by harvest stem rust infection was present on practically 100% of the oats plants in the State, it did not develop anywhere as a serious disease. Except in a few of the fields examined, hardly more than a trace of the stem area was occupied by stem rust pustules. Exceptions to the rule all occurred in the northeastern quarter of the State, fields being seen with rust severities as follows: in Iroquois and Marshall Counties, 1.3% of the stem area rust-occupied, in Lake County 2%, in Kankakee County 2.5%, in McHenry County 3%, and in Grundy County 7%.

Barley Rusts. -- Barley leaf rust [P. anomala] was very mild throughout the State. In southern winter barley fields up to 50% of the plants became infected, but in no field was more than 1% of the leaf area occupied by rust pustules. In most northern, spring barley fields leaf rust was observed on 100% of the plants, but in these fields the attack was light also, the amount of leaf area occupied ranging from a trace to 7%. Barley stem rust was not observed south of Clark County. The highest number of infected plants counted in any field was 28%, and in this field rust pustules occupied only about 1% of the stem area.

Rye Rusts. -- Rye leaf rust [P. rubigo-vera secalis] had infected 100% of the plants in most fields examined. The attack was, however, mild, resulting in rust occupation of only 3 to 7% of the leaf area. Stem rust of rye was much less prevalent and only a few infected stems could be found in any of the fields examined.

ILLINOIS NATURAL HISTORY SURVEY

SOYBEAN DISEASE INCIDENCE IN MARYLAND IN 1942 AND 1943[1/]

M. A. Petty

With 125,000 acres of soybeans planted in Maryland this year, there was a definite need for knowledge of the incidence and severity of diseases of soybeans. In 1942, one soybean disease, frog-eye spot, was reported from Maryland by M. W. Woods (PDR 26: 281, 1942). Its causal organism was identified as Cercospora daizu Miura[2/]. The only soybean diseases

1/Scientific Paper No. A63, Contr. No. 1905 of the Maryland Agr. Exp. Stat. (Dept. Plant Path.).

2/Binomial combinations used here are according to H. W. Johnson and B. Koehler, Soybean diseases and their control. U. S. Dept. Agr. Farmers' Bull. 1937.

reported previously from Maryland were leaf spots of undetermined cause and were recorded by J. B. S. Norton in 1916 and by A. A. Jehle and C. E. Temple in 1924. This problem was approached in two ways: first by examination of beans grown in 1942, and secondly by a number of periodic survey trips into representative portions of the State during the current season.

Samples of both edible and field soybeans grown in Maryland in 1942 were obtained from 4 different localities; Sudlersville, Snow Hill, Westover, and Ridgley. These beans showed several pathological conditions. Oospore incrustations of the downy mildew fungus (Peronospora manshurica (Naoum.) Syd.) were found on the seed coats of varieties having light-colored seed (Johnson and Lefebvre, P. D. R. 26: 49. 1942). Purple seed spot (probably caused by Cercospora kikuchii Mats. & Tom.) was also present on the light-colored seed. Other discolorations and pitting of the black-seeded varieties were present, but their causes have not been determined.

Severe drought conditions coupled with above-normal temperatures have prevailed in the State from June 12 through September 1. During this period there was approximately a 7-inch moisture deficit, and a maximum temperature of 90°F or above was recorded on 60 days at College Park. The average daily departure from normal for both Washington, D. C. and Baltimore was plus 4.8° from June 8 to August 17. Losses due to parasitic diseases have been less than what was indicated by early widespread infections of downy mildew and bacterial leaf diseases. In addition to the 2 just mentioned, the majority of the more important parasitic troubles have been observed in the State.

Bacterial blight and bacterial pustule (Pseudomonas glycinea (Coerp.) Stapp and Xanthmonas phaseoli var. sojense (Hedges) Starr & Burkholder, respectively) have been observed generally in Maryland. Bacterial pustule appeared near Collington as early as the second week in June and, according to symptomatology, seems to be the more prevalent of the 2 bacterial diseases. Later cultural work will determine this point.

Diaporthe stem canker (Diaporthe sojae Lehman) was first observed on July 2, in a field near Snow Hill. Only a fraction of 1% of the plants were affected. This field was plowed shortly afterwards preventing furthur observations.

Frog-eye spot (Cercospora daizu Miura) was first collected on June 24 near Bel Air. Since then, after the plants began to flower, it has been found in every field examined. This disease seems to be as widespread as the bacterial pustule.

Septoria leaf spot and stem blight (probably caused by Septoria glycines Hemmi) has been found on stems and leaves but it has not been common in the disease collections.

Downy mildew (Peronospora manshurica (Naoum.) Syd.) was collected in most of the fields examined throughout the State in the early part of the season. However by the middle of August, downy mildew had practically disappeared.

Alternaria sp. was found on severely blighted leaves of edible soybeans near Westminster. Inoculations will be made to determine the virulence of this fungus as it seems unlikely that an Alternaria would be capable of causing such a severe blighting under the type of drought conditions found in Maryland this year.

Fusarium wilt or root rot was observed as causing a 2 to 4% loss in stand in a field of edible soys near Chestertown. Roots placed in moist chamber developed a profusion of micro- and macroconidial tufts. Fusarium spp. have been isolated from the roots of edible and field soybean seedlings affected with wilt or damping off.

Typical Rhizoctonia damping-off was present in most fields observed in the early part of the season, but only a small fraction of 1% of the plants were so affected.

Charcoal rot was the most important disease in the State during this very dry season and resulted in a 5 to 8% loss of stand and severe stunting in a number of fields on the Eastern Shore. At first this was thought to be merely heat canker because the plants began to die after 2 or 3 weeks of dry and hot weather. Closer examination revealed typical sclerotia of Sclerotium bataticola Taub. on the stem and crown of the root of almost every dead plant and of the majority of the stunted and yellowed plants. Tissue platings were made of the affected portions of plants in all stages of the disease. These were from various localities. In all cases they have yielded S. bataticola. In four collections, 63 pieces were plated; 32 yielded cultures of S. bataticola, Fusaria grew out from 7, Mucors came from 11, 4 gave Aspergilli, bacteria grew from 36, and 17 growths were not identified.

Mosaic was observed in an experimental planting of edible soys at Ridgley and in field soybeans at Bel Air.

Potash deficiency was observed in 2 fields near Cambridge on July 12. The symptoms appeared as a marginal yellowing and vein clearing of the leaves as well as a stunting of the plant. Analysis of a soil sample showed an almost complete absence of potassium.

Sun scald of soybean foliage has not been observed. Although the season was such as to cause severe injury to many fields of green string beans, no complaints concerning sun scald of soybeans have been received. High temperatures and lack of water killed many plants on well drained sandy land.

Work is continuing on the incidence of soybean diseases. Loss due to parasitic diseases has not exceeded about 1% to date (August 18, 1943), owing to drought conditions, which, at the same time, have retarded the growth of late-planted beans so greatly that much acreage originally planted for oil will not mature and instead, will be harvested for hay.

UNIVERSITY OF MARYLAND

PLANT DISEASE SURVEYS IN TEXAS

G. M. Watkins

On August 3, 4, and 5, I travelled with Dr. L. M. Blank of the Division of Cotton and Other Fiber Crops and Diseases to examine his field work on the control of Phymatotrichum root rot of cotton. Dr. Blank's field experiments are located mostly on heavier type soils of Burleson, Washington, Lee, Fayette, Travis, Williamson, Lavaca, and Gonzales Counties.

Phymatotrichum root rot (P. omnivorum) is less severe than usual on cotton in most areas visited. This appears to be related to the unusually dry weather. In a number of fields the first scattered plants were

beginning to die.

At the end of one cotton field of about 5 acres in Washington County, near Brenham, a spot of about one acre was observed in which most of the plants were dead or dying from Fusarium wilt (F. vasinfectum) combined with root knot (Heterodera marioni). In other parts of the same field there were spots of plants dying from Phymatotrichum root rot. The soil in the field was noticeably heterogeneous, and the Fusarium wilt and root knot occurred on an area of lighter soil.

A field of cotton near Giddings, Lee county, showed perhaps 5% of the plants infected with Fusarium wilt.

Almost all cotton fields examined showed a slight amount of angular leaf spot (Xanthomonas malvacearum), but there was practically no manifestation of the boll rot phase.

Several peanut fields were examined during the trip. All were apparently free of disease, except one field near Hallettsville, Lavaca County, in which there was moderately severe infection with Cercospora leaf spot. Another field near Lincoln, Lee County, showed scattered plants bearing the same disease.

During the following week Dr. A. A. Dunlap of the Texas Experiment Station, and I made a trip to the Texas Panhandle to examine diseases of potatoes, which were being harvested in that section. The itinerary was through Waco, Stephenville, Eastland, Cisco, Albany, Aspermont, Spur, Lubbock, Plainview, Floydada, Muleshoe, Hereford, Amarillo, and Texline.

At Stephenville, Erath County, we visited Texas Substation No. 20 and nearby privately owned truck fields. This region was suffering from prolonged drought, and plant diseases were not much in evidence. About 2% of summer tomato plants on the substation had been killed by Sclerotium rolfsii.

A trace of bacterial leaf spot (Xanthomonas pruni) was observed on peach trees from which all fruit had been harvested. In a nearby watermelon field about 3% of the plants were found to be dying with wilt (Fusarium bulbigenum var. niveum). Peanut fields through this region showed no diseases.

Near Rule, Haskell County, in a cotton field containing plants about 2 feet high but suffering from drought, occasional plants were seen dying from Phymatotrichum root rot. Otherwise little of the disease was observed in this county.

A visit was made to fields at Texas Substation No. 7 at Spur, Dickens County. The chief crops in active growth there were grain sorghums and cotton. No diseases were seen, although staff members stated that angular leaf spot had been serious on cotton earlier in the season and had caused considerable loss of foliage.

At Lubbock, Lubbock County, the first potato fields were seen, although the tops of the plants were dried and harvesting was under way. The harvest from one field of White Rose was examined. Almost all tubers showed a pronounced tapering toward the stem end that seemed much like spindle tuber. Diagnosis is reserved in this case, because some experienced growers in the Texas Panhandle insist that the variety White Rose produces greatly elongated tubers tapering toward the stem end as a result of unsatisfactory soil and growth conditions, and that spindle tuber is

not necessarily present. Further light may be shed on this question by examination of plants during growth, unless temperatures are too high.

Several fields and 2 graders and washers were visited at Lubbock. The most prevalent disease was a soft rot (possibly Erwinia carotovora), affecting perhaps 5% of the tubers, and apparently related to the high soil temperatures prevailing at digging time. Many growers were working digging crews through the hot part of the day with the temperature well above 100° F. Growers interviewed at Lubbock said they had had to leave the potatoes in the ground 2 or 3 weeks too long, because of circumstances beyond their control. About 2% or 3% of the tubers were scabby (Actinomyces scabies) and a trace of Rhizoctonia was seen on tubers coming through graders. Some evidence of early blight (Alternaria solani) was seen on dried tops in unharvested fields.

At Aiken, Floyd County, just east of Plainview, the most serious potato disease was scab, which appeared on perhaps 50% of tubers coming through the grader. Soil samples were taken from 2 fields from which scabby potatoes were being harvested. These later tested approximately pH 7.5. One lot of White Rose showed the same resemblance to spindle tuber symptoms as those seen at Lubbock.

Two large growers were visited near Muleshoe, Bailey County. The most serious disease seen was early blight, which was present on several varieties.

At Hereford, Deaf Smith County, 2 growers were contacted who suspected the presence of bacterial ring rot in certain of their fields. A careful inspection of these fields failed to reveal any clear symptoms of the disease. It appeared instead that a good deal of soft rot was present. Gram stained smears as well as isolation attempts made later from tubers from these fields showed only Gram-negative organisms. A trace of Sclerotium rolfsii was found in fields at Hereford.

In Texline, Dallam County, the potato crop is a month to 6 weeks later than at Plainview or Lubbock, and plants were still to be seen in active growth. No symptoms of late blight were seen, although some growers had believed it to be present. Early blight (Alternaria solani) was general in all fields seen and was moderately severe in some plantings. In a few fields about 1% of the plants were attacked by Rhizoctonia. A 40-acre field of pinto beans was observed to have about 90% of the plants showing mosaic.

On the way back to College Station from the trip to the Panhandle area a visit was made August 16 to Texas Substation No. 12 at Chillicothe, Hardeman County. At this place charcoal rot (Sclerotium bataticola) was showing up on susceptible varieties of grain sorghum, causing a great deal of lodging in some cases. On a soy bean variety test plot most varieties showed severe lesions of bacterial pustule (Xanthomonas phaseoli var. sojense) on the foliage. Pythium root rot was also evident on susceptible varieties of sorghum.

Later the same day a stop was made at Texas Substation No. 16, at Iowa Park, Wichita County. The only diseases noted were Phymatotrichum root rot, which was just beginning to kill cotton, and southern blight, which had killed an occasional plant in the tomato variety test garden.

A small amount of charcoal rot on sorghum was seen at Texas Substation No. 6 at Denton, Denton County. Bacterial pustule was severe on most varieties of soy bean. Bacterium sesamicola, recently noted by Dr. A. A. Dunlap on sesame at College Station (P. D. R. 27: 274) was causing severe foliage injury to experimental plantings of this species at Denton.

Thursday morning, August 26, I left College Station on a trip through Grimes, Montgomery, Harris, Walker, San Jacinto, Polk, Tyler, Hardin, Jasper, and Newton Counties in the southeastern corner of the State. The principal growing crops encountered were cotton, peanuts, cowpeas, and sweet potatoes. In most localities peanuts and sweet potatoes were suffering severely from drought and no diseases were seen on these crops.

Moderate to severe wilt (Fusarium vasinfectum) was observed in several cotton fields on light types of soil in Walker, San Jacinto, and Polk Counties. In Polk County a cotton field of perhaps 100 acres was examined in the Trinity River bottom. The soil was of some heavy, fertile, alluvial type; half the field was planted in D. and P. L. #14 and the remainder in Qualla. About three-fourths of the Qualla plants examined were infected with the wilt fungus. Very little of the D. and P. L. #14 variety showed wilt and these plants were bearing a rather heavy crop of cotton. Nothing of the history of past crops on this land could be learned, but the case is of interest in that D. and P. L. #14 is not considered to be a wilt-resistant variety. Qualla is, of course, regarded as very highly susceptible. In this same field there were areas in which angular leaf spot was moderately serious. No bacterial lesions were found on bolls.

In one field of cowpeas in Walker County and in two in Polk County a leaf spot caused by Cercospora cruenta was present on almost every leaflet throughout the fields and seemed to be causing heavy defoliation. A cowpea planting in Walker County was suffering from the presence of aphids and an undetermined sooty mold (Fumago?).

There are numerous home pear orchards in Polk County and several of these were examined. All of them had a considerable loss of wood from fire blight (Erwinia amylovora) during the present season.

One late watermelon planting was examined in Walker County and a trace of leaf spot (Cercospora citrullina ?) was found.

A home pecan grove at Woodville, Tyler County, was found to have a moderate amount of scab (Cladosporium effusum) and to be suffering a considerable loss of nuts from this and probably other causes.

On Monday morning, August 30, I continued the trip begun the week before, going through Jasper, Sabine, San Augustine, Nacogdoches, Shelby, Cherokee, Anderson, Houston, Leon, and Robertson Counties, and returning to College Station Wednesday afternoon.

In Jasper County a home plum orchard was found to have very heavy foliage infection with Xanthomonas pruni. No cankers were seen on the trees, however.

Several wilt-infested cotton fields were examined in Shelby, San Augustine, Nacogdoches, and Cherokee Counties. In most of these perhaps 5% of the plants proved to be infected with Fusarium vasinfectum. In some of the fields, chiefly in Nacogdoches and Cherokee Counties, root knot (Heterodera marioni) was present in combination with wilt. Rather severe leaf infection by Xanthomonas malvacearum was found on cotton in the Trinity River bottom in Houston County.

Cowpeas were being seriously defoliated by leaf spot (Cercospora cruenta) in certain fields in Nacogdoches, Shelby, Cherokee, Anderson, and Leon Counties.

It was between tomato seasons in Cherokee County, an important production area, and only one active field was seen. In it about 10% of the plants had died from southern blight (Sclerotium rolfsii), and a trace of early blight (Alternaria solani) was found.

Peanuts in Nacogdoches, Shelby, Cherokee, Anderson, Houston, and Leon Counties showed widespread but mild infections with Cercospora arachidicola, causing leaf spots. Dr. P. A. Young, Jacksonville, Texas, has told me that the common Cercospora leaf spot on peanuts in that section is caused by C. arachidicola and not C. personata.

A row of collards in a garden at Nacogdoches, Nacogdoches County, was found heavily infested with the root knot nematode.

A visit was made to Dr. P. A. Young's Tomato Disease Laboratory at Jacksonville. He showed me a planting of Crotalaria spectabilis on the laboratory grounds that was almost wiped out by charcoal rot (Sclerotium bataticola). Dr. Young and I then went to visit certain cotton, peanut, and truck plantings in Cherokee County. A field of sugar cane (ribbon cane) was found in which all plants examined showed mosaic. One small planting of pepper had many plants attacked by dodder (Cuscuta arvensis), while another showed a trace of leafspot (Cercospora capsici), and numerous plants showing virus disease. A planting of eggplant was found showing severe symptoms of yellows. Dr. Young stated that he believed this to be the first observation of eggplant yellows in east Texas. One field of strawberries was seen with a trace of leafspot (Mycosphaerella fragariae). A species of wild shrub, Vaccinium arboreum, was found to be heavily infected with a fungus identified by Dr. Young as Ophiodothella vaccinii.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SUMMARY OF PLANT DISEASES OBSERVED IN ARIZONA AND NEW MEXICO

Wm. G. Hoyman

Crops were examined in 3 southeastern Arizona Counties: Cochise County, from August 24 to 28, Graham County, August 31, and Greenlee County, September 2; and in 2 southwestern New Mexico Counties: Hidalgo County, September 3, and Luna County, September 4.

Observations are summarized in the accompanying tabulation:

HOST Disease	State County: Location	Damage	Variety, etc.
ALFALFA			
Bacterial wilt (Corynebacterium insidiosum)	Arizona		
	Cochise: San Simon	Trace	
	Willcox (Sulphur Springs Valley)	Trace	
	Pomerene	Light	
	Douglas (Whitewater)	Trace	

(ALFALFA cont.)			
	Douglas	Trace	
	Greenlee: Duncan	Trace	
	New Mexico		
	Luna: Deming	Slight	
Leaf spot (Pseudopeziza medicaginia)	Arizona		
	Cochise: Douglas	Heavy	
	Greenlee: Duncan	Moderate	
	New Mexico		
	Hidalgo: Virden	Trace	
Root rot (Phymatotrichum omnivorum)	Arizona		
	Cochise: Douglas (Sulphur Springs Valley)	Light	
	Graham: Thatcher	Light	
	New Mexico		
	Hidalgo: Virden	Light	
	"	Slight	
	"	Slight	
Anthracnose (Colletotrichum trifolii)	Arizona		
	Cochise: Douglas	Heavy	
	Graham: Ft. Thomas	Moderate	
	Greenlee: Duncan	Light	
Girdle	Arizona		
	Cochise: Willcox (Stewart)	Minor	
	Graham: Safford	25%	
	New Mexico		
	Hidalgo: Virden	Trace	
	"	Trace	
Downy mildew (Peronospora trifoliorum)	New Mexico		
	Hidalgo: Virden	Trace	
APPLE			
Iron deficiency	Arizona		
	Graham: Ft. Thomas	Moderate	
BEAN			
Common bacterial blight (Xanthomonas phaseoli)	Arizona		
	Cochise: Willcox (Stewart)	Moderate	Pinto
	Willcox (Sulphur Springs Valley)	Light	Mexican Pink
	Douglas (Whitewater)	Light	Pinto
	Graham: Safford	Light	--
	Greenlee: Duncan	Moderate	Pinto
	New Mexico		
	Luna: Deming	Moderate	Pinto

(BEAN cont.)			
Curly top (virus)	Arizona		
	Cochise: Willcox (Sulphur Springs Valley)	Trace	Mexican Pink
	New Mexico		
	Hidalgo: Virden	Trace	Pinto
Rust (Uromyces phaseoli var. typica)	Arizona		
	Cochise: Willcox (Stewart)	Trace	Pinto
	Douglas	Moderate	--
Powdery mildew (Erysiphe polygoni)	Arizona		
	Cochise: Douglas	Moderate	--
Dry root rot (Fusarium martii var. phaseoli)	Arizona		
	Graham: Safford	Light	--
Root knot (Heterodera marioni)	Arizona		
	Graham: Solomonsville	Trace	Pinto
Mosaic (virus)	Arizona		
	Cochise: Willcox (Sulphur Springs Valley)	1%	Mexican Pink
CANTALOUP			
Leaf spot (Alternaria cucumerina)	Arizona		
	Cochise: San Simon	Moderate	
CORN			
Smut (Ustilago maydis)	Arizona		
	Graham: Ft. Thomas	Trace	
	Greenlee: Franklin	Trace	
	New Mexico		
	Hidalgo: Virden	Trace	
CORN (SWEET)			
Smut	Arizona		
	Cochise: Douglas (Whitewater)	5%	
COTTON			
Angular leaf spot (Xanthomonas malvacearum)	Arizona		
	Cochise: Willcox (Stewart)	Moderate	--
	Graham: Solomonsville	Heavy	Long staple
	"	Trace	Short staple
	"	Trace	Long staple
	Greenlee: Franklin	Moderate	Short staple
	"	Heavy	" "

(COTTON cont.)

	New Mexico			
	Luna: Deming		Moderate	Short staple
	"		Moderate	" "
Verticillium wilt (V. albo-atrum)	Arizona			
	Cochise: Willcox (Stewart)		Trace	--
	Graham: Solomonsville		Moderate	Short staple
	Ft. Thomas		Moderate	" "
	"		Trace	" "
	Greenlee: Duncan		Heavy	" "
	"		Moderate	" "
	Franklin		Moderate	" "
	"		Light	" "
	New Mexico			
	Hidalgo: Virden		Slight	" "
	"		Trace	" "
	"		Trace	" "
	"		Trace	" "
	"		Slight	" "
	"		Slight	" "
	Luna: Deming		Slight	" "
Rust (Puccinia stakmanii)	Arizona			
	Graham: Solomonsville		Trace	" "
	Ft. Thomas		Moderate	" "
	"		Moderate	" "
	"		Light	" "
	New Mexico			
	Luna: Deming		Trace	" "
	"		Trace	" "
	"		Trace	" "
	"		Trace	" "
Root rot (Phymatotrichum omnivorum)	Arizona			
	Graham: Thatcher		Moderate	Long staple
	New Mexico			
	Hidalgo: Virden		Slight	Short staple
	"		Moderate	" "
	Luna: Deming		Slight	" "
Alternaria sp.	Arizona			
	Graham: Safford		Moderate	Long staple
	Solomonsville		Moderate	" "
	Greenlee: Duncan		Moderate	Short staple
	New Mexico			
	Hidalgo: Virden		Moderate	" "
	"		Moderate	" "
	"		Moderate	" "
	"		Moderate	" "
	"		Moderate	" "
	Luna: Deming		Trace	" "
	"		Trace	" "

(COTTON cont.)			
Fusarium wilt (F. vasinfectum)	Arizona Graham: Safford	Trace	Short staple
Fusarium roseum (boll disease)	Arizona Graham: Safford	10.8%	Long staple
Nitrogen deficiency	New Mexico Luna: Deming	Severe	Short staple
PEACH			
Mosaic (virus)	Arizona Cochise: Cochise (Cochise Stronghold)	10%	
	"	Light infection of one tree in 1235	
	Graham: Thatcher	Light	
	Ft. Thomas	Heavy	
Nitrogen deficiency	Arizona Cochise: Elfrida	75% of 4000 trees	
	Graham: Ft. Thomas	Moderate	
	Greenlee: Duncan	Moderate	
Immature fruits	Arizona Cochise: Elfrida	50% of fruit on Hale peach	
	New Mexico Hidalgo: Virden	Moderate on Hale peach	
Root rot (Phymatotrichum omnivorum)	New Mexico Hidalgo: Virden	Moderate	
Wart (virus)	Arizona Cochise: Cochise (Cochise Stronghold)	1.5%	
PECAN			
Rosette (non-par.)	Arizona Graham: Thatcher	Light	
PEPPER			
Curly top (virus)	Arizona Cochise: San Simon	Trace	Paprika
	Douglas (Whitewater)	7%	Bell
	" "	Trace	Chili
	Graham: Ft. Thomas	Trace	"
	Greenlee: Duncan	Trace	"

(PEPPER cont.)			
Blossom-end rot (non-par.)	Arizona		
	Cochise: Douglas (White-water)	15%	Chili
	Graham: Ft. Thomas	Light	"
	"	Light	"
	Greenlee: Duncan	Trace	"
	New Mexico		
	Luna: Deming	Trace	"
Fusarium annuum	Arizona		
	Cochise: San Simon	5%	Paprika
	Pomerene	Trace	Chili
	Douglas (White-water)	Light	"
	Greenlee: Duncan	Trace	"
Mosaic (virus)	Arizona		
	Cochise: Willcox (Stewart)	1%	Paprika
	" "	1%	Chili
SAGE			
Root knot (Heterodera marioni	Arizona		
	Cochise: San Simon	1%	
SOYBEAN			
Bacterial pustule (Xanthomonas phaseoli var. sojense)	Arizona		
	Graham: Solomonsville	Moderate	
SQUASH			
Powdery mildew (Erysiphe polygoni)	Arizona		
	Cochise: Douglas	Light	White Scallop
Curly top (virus)	"	Light	" "
Mosaic (virus)	"	Light	" "
STRAWBERRY			
Phytophthora cactorum	Arizona		
	Graham: Ft. Thomas.	Trace	
Rhizopus nigricans	"	Trace	
Iron deficiency	"	Moderate	
TOMATO			
Root knot (Heterodera marioni	Arizona		
	Cochise: Douglas (White-water)	Light	
	Graham: Safford	25%	
	Ft. Thomas	Light	

(TOMATO cont.)			
Curly top (virus)	Cochise: Willcox (Stewart)	1%	Farm garden
	" "	5%	Farm garden
Early blight (Alternaria solani)	Cochise: Hereford	Moderate	
Psyllid yellows (induced by psyllid)	Cochise: Douglas (Whitewater)	Trace	
WATERMELON			
Anthracnose (Colletotrichum lagenarium)	Arizona		
	Cochise: Willcox (Stewart)	75%	Farm garden
	" "	100%	Farm garden
	Willcox (Sulphur Springs Valley)	75%	
	Pomerene	Light	
	Douglas (Whitewater)	Light	
	Hereford	100%	
	Douglas	Light	
	New Mexico		
	Luna: Deming	50%	
Leaf blight (Alternaria cucumerina)	Arizona		
	Cochise: Douglas	Moderate	
	Greenlee: Duncan	Light	

EMERGENCY PLANT DISEASE PREVENTION PROJECT

DISEASES OF VARIOUS CROPS IN NEVADA AND UTAH

Seth Barton Locke

NEVADA: August 31 and September 1 and 2 were spent in the field in western Nevada. Thirty-three fields were visited in Washoe, Douglas, Lyon, Churchill and Pershing Counties. Twenty-four of these were devoted to Irish potatoes, 5 to alfalfa, and 4 to vegetables.

The chief trouble found on potatoes was wilt, caused by Fusarium oxysporum or Verticillium albo-atrum. Wilt was present in all 5 counties covered in the survey and in 19 of the 24 fields. In many fields the disease was well advanced and affecting a large percentage of the plants in the field, while in others it was showing up as a yellowing of the lower leaves only. In these latter cases the potatoes were planted later and will, no doubt, suffer as severely as the earlier planted ones before digging time. Leaf roll (virus) was also found in all 5 counties, and in 12 of the fields visited. It varied in intensity from a trace to 40% of the plants showing advanced symptoms. Rhizoctonia disease was found in 7 fields in Washoe County and in one field in Lyon County. It varied in intensity from 1% to 100% of the plants bearing

root and stem lesions and from 1% to 25% of the plants dying. From 0.5% to 1% rugose mosaic (virus) was found in 4 fields in 3 counties. No doubt much leaf roll and mosaic were overlooked because of the severity of the wilt symptoms in many fields. A trace of scab (Actinomyces scabies) was found in one field in Washoe County. Nematode injury was not discovered although a search was made for it.

In one of the 5 alfalfa fields visited, 3% of the plants were affected with bacterial wilt. Another field showed practically 100% of the plants bearing a few leaf spots near the ground (Pseudopeziza medicaginis). In 2 fields red clover had been planted with the alfalfa. In these fields downy mildew was present on one or more shoots of 5% and 50% of the plants in the form of leaf lesions. The red clover was 100% covered with powdery mildew (Erysiphe polygoni).

The 4 vegetable plantings visited contained carrots, onions, cabbage, winter and summer squash, tomatoes, beets, turnips, celery, endive, and chard. The beets were lightly spotted with leaf spot (Cercospora beticola). In one case a turnip planting was 90% covered with powdery mildew (Erysiphe polygoni) and in another a trace of a wet crown rot was found. A celery planting showed 2% of the plants affected with mosaic (virus).

UTAH: September 9 and 10 were spent in Utah, Davis, Weber, and Boxelder Counties observing diseases occurring on miscellaneous vegetable crops. Forty-eight plantings were visited.

Snap and dry beans in Utah County were found to have suffered severely from bacterial halo blight (Pseudomonas medicaginis var. phaseolicola). The appearance of this disease in epiphytotic intensity in Utah is considered very unusual. In this case it may be associated with a series of heavy thunder showers which occurred in the county beginning about the middle of July. In the 3 large plantings visited in Utah County, 100% of the plants were affected. About 25 to 30% of the foliage was destroyed and from 90 to 100% of the pods remaining on the plants were heavily spotted. Only 2 pickings of snap beans were obtained where from 6 to 8 are normal. This represents a complete loss of about 30% of the crop in this county, not to mention the loss in grade because of spotting of the pods harvested. A trace of bacterial blight was found also in one field of snap beans in Davis County.

Foot rot of beans (Fusarium spp.) was found in 2 plantings, affecting 30 and 75% of the plants and killing up to 2% of them. Five plantings were affected with mosaic, from a trace to 75% of the plants showing the symptoms.

Two plantings of lima beans were visited and no disease was found.

Six plantings of onions were visited. In one planting 5% of the bulbs were affected with bulb rot (Fusarium spp.).

Seven plantings of carrots were visited. Two in Utah County showed 25 and 30% of the foliage heavily spotted with Cercospora leaf blight (Cercospora carotae). Two others in Weber and Davis Counties showed a trace of the same disease, and the remaining 4, in Davis and Boxelder Counties, were free from disease.

Seven cabbage plantings showed no disease except for a trace of mosaic in one field in Utah County.

Four plantings of cantaloup showed 1 and 0.5% Fusarium wilt (F. bulbigenum var. niveum) in 2 fields. Two plantings of turnips were 50 and 100% affected with powdery mildew. Of 3 cucumber plantings one was 4% affected with mosaic. In one planting of sweet corn a trace of smut was found, in another 7% of the ears were smutted. Table beets were 100% lightly affected with Cercospora leaf spot. No disease was observed in the plantings visited of eggplant, peppers, asparagus, watermelon, and celery.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

VARIOUS DISEASES OBSERVED IN CALIFORNIA

Horace L. Barnett

August 31 and September 1 were spent in Stanislaus and Merced Counties with Dr. M. W. Gardner and part of the time with Dr. J. B. Kendrick.

Considerable time was spent in fields of black-eye beans. Plantings on old infested soil showed as high as 75 to 80% dead plants from Fusarium wilt (F. vasinfectum var. tracheiphilum). Some other fields showed little loss. Wet fields with heavy top growth showed damage due to Pythium canker on the stem. In one field a few plants showed a wilted condition somewhat unlike the symptoms of Fusarium possibly due to Verticillium, since cotton had recently been grown on the field. Charcoal stem rot (Sclerotium bataticola) was seen on several dead plants.

Damage to sweet potatoes in the area from stem rot (Fusarium sp.) was found to be serious, in one field estimated at between 30 and 40%. Other fields showed varying amounts of loss. Another field showed scattered dead plants due to black rot (Ceratostomella fimbriata).

Nematode damage [presumably root knot] on squash was severe locally.

Fusarium root rot on squash caused great damage to one seed field. Almost 100% of the plants were killed in spots where waste material from threshing seed had been returned to the soil for fertilizer.

Some damage by Verticillium was seen on young peach trees and on cotton planted in the orchard in Merced County.

Mosaic and spotted wilt (virus) were seen on scattered plants in a field of peppers.

A stem end rot of cantaloupe observed in the field was thought to be due to failure of the stem scar to heal over quickly enough to prevent decay organisms from entering. The field had very heavy vine growth.

September 6 to 11 was mostly spent in Tulare County, near Visalia and Woodlake, where in recent years there has been a severe outbreak of Pierce's disease of grapes, caused by a virus. Considerable time was spent in the area of vineyards in which the California Experiment Station is carrying on work concerning the control of this disease. This work consisted of roguing out the diseased plants in a large area and afforded a very good opportunity to become familiar with the symptoms of the disease at this time of the year. For the most part the diseased plants were scattered but a few small areas showed heavy infections. There was evidence that the number of diseased plants was being materially reduced by careful roguing.

Vineyards in the whole area around Visalia (Tulare County) were severely damaged by Pierce's disease, especially where no roguing or only careless roguing had been carried on. The difficulty in estimating the extent of the damage was increased by the common presence of black measles, the symptoms of which are somewhat similar.

Observations were made on a new dieback disease of walnut. So far as is known, the disease is limited in extent to a small area in Tulare County. Some of the growers are becoming alarmed about its spread through the orchards. The disease is under study by the California Experiment Station and is severe enough to warrant a close lookout for it in other walnut-growing areas.

Several fields of alfalfa in Tulare and Fresno Counties were observed for the virus disease, alfalfa dwarf, which is widespread in this region. Most of the fields 2 years old or older showed damage. Many of the older fields had been abandoned or returned to pastures because of the thinning stands due to the dwarf disease. Only a trace of bacterial wilt of alfalfa was seen.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SOME OBSERVATIONS ON PLANT DISEASES IN OREGON AND WASHINGTON

Lytton W. Boyle

OREGON

From August 22 to August 28 a cursory survey was made through Klamath, Jackson, Josephine, Douglas, and Lane Counties.

Some very fine and some very poor fields of potatoes were observed in Klamath County, August 23. The contrast provided an excellent demonstration of the value of certified seed and of the judicious use of irrigation water.

In the area 5 miles east of Klamath Falls, 2 to 3% of mild mosaic (virus), 5 to 7% of Rhizoctonia (R. solani), and traces of blackleg (Erwinia phytophthora) were observed. Farms in this locality evidenced skilful use of water to hold Rhizoctonia and blackleg in check.

From 7 miles east of Klamath Falls to 5 miles east of Merrill, certain fields, from certified seed as far as could be determined, appeared to be in excellent condition. Mild mosaic and leaf roll (virus) occurred, but determination of their prevalence was made uncertain by the poor condition of the plants due to other causes. Other diseases observed were Rhizoctonia, 3 to 25%; blackleg, a trace to 80%; and wilt [cause not specified], of which traces were evident in some cases but which may have been obscured by other troubles. Excessive use of irrigation water was apparent in the field showing the extremely severe attack of blackleg. Many of the plants showed brown spots that were probably due to the combined effect of cold temperatures and root troubles.

In Jackson County, August 24, pears were being harvested. On the whole, disease control had been quite successful. The leaves in one orchard showed necrotic areas limited by the veins. Active leaf tissue was reduced as much as 10% on some trees. Mite injury was suspected, resulting from a delay in early spraying for control. In several spots in the orchard the fruit was small and showed deep cracks. The cause

was not apparent, but was suspected to be a soil condition. Traces of scab (Venturia pyrina) were found.

Hops observed August 25 in Josephine County were, in general, in good condition, poorer fields apparently being due to differences in soil or cultural practice. Except for a rare plant showing extremely heavy infection by Pseudoperonospora humuli only traces of downy mildew were seen.

On August 26, Douglas County was visited. Filbert scald, due to environmental factors (diagnosed by Dr. P. W. Miller), was prevalent in some orchards about 7 miles from Roseburg. Bacterial blight (Xanthomonas juglandis) was prevalent in most walnut orchards. An undetermined wilt was observed on watermelon and cantaloup at Dillard.

Bean plantings were observed August 27 in Lane County. A late infection of rust was of no economic importance since most of the crop had been harvested. Earlier infection had apparently been controlled successfully throughout the area. There was from 3 to 5% of Rhizoctonia attack in the average field, but effect on the crop could not be estimated since most of the beans had been harvested. Traces of mosaic were observed in some fields.

On August 28 a trip was made with Ray Bowers, Lane County Horticultural Inspector. In one eggplant patch about 7% of the plants were affected by a Verticillium-like wilt, which is being investigated by Dr. F. P. McWhorter. The disease is not typical of the eastern type of wilt. In a nearby tomato field an undetermined root infection was observed. This field had been flooded after planting and many of the plants had been lost.

The severity of walnut snakehead, suspected to be due to soil deficiency, varied greatly between orchards. Bacterial blight was reported to have been more severe than usual.

Peach brown rot (Monilinia sp.) was severe in one orchard where the spray program was not maintained. Many mummies were observed on the trees. Fruit spot (Coryneum carpophilum) was apparent on practically all fruit in orchards where the spray program was not maintained during the past season. Blight or dieback of the twigs due to both of these diseases was prevalent. In the area as a whole control has been satisfactory.

September 3 was spent with Dr. F. P. McWhorter of the Oregon Agricultural Experiment Station, in a survey trip in the vicinity of Salem.

In a bean plot adjacent to a field of gladioli at Mt. Angel, practically all plants in the row next to the gladioli show symptoms of virus infection (Phaseolus virus 2). The percentage of infected plants gradually decreased to about 4 or 5% in rows further removed from the gladioli. This is the third report of such a situation received at the Experiment Station. Dr. McWhorter is starting a test to determine what relationship, if any, exists between virus infections in these hosts.

Bean fields along the Bean Alley, Stayton, were examined for the recurrence of a disease reported last year as resembling Jenkins blight (virus). No conclusive evidence of the recurrence of this trouble was found in a part of a field where 2 plantings died down the past season. An occasional dead dried plant was suggestive.

Some Rhizoctonia infection was evident, particularly in parts of

fields where contour caused excess irrigation.

Late rust infections were evident but of no economic importance. This area used to be considered free from rust. As yet no control program is necessary to production of the crop. These beans were grown on wires. The relative merits of wire as against poles to support the crop is being watched. It is believed by many that spores are held by the poles and more rust occurs as a result of their use.

A great number of bright yellow leaves was noticed in the bean fields of this area. On closer examination no evidence of an infection was apparent. The leaves and young beans had dropped from the upper spurs of the plants. Growers are making no late picking and estimate their loss at from 30 to 50% of the expected crop. The information available suggests a physiological disturbance due to the quantity or quality of the fertilizers used. Water was not a limiting factor since the beans are grown under irrigation.

Stems and leaves of plants in a potato field between central and north Howell were noticeably brown from a distance. On closer examination it was found that from one to all of the branches of affected plants were turning brown as they died. Some Rhizoctonia symptoms were evident, but these were not consistent with the brown or dead tops. Tubers were near the surface and were malformed (fingers or small tubers attached to a larger one). The cause of the dead tops was not apparent. History of the field or the seed could not be determined.

SOUTHWESTERN WASHINGTON

From September 7 to 11, a cursory survey was made through Clark, Cowlitz, Lewis, and Thurston Counties.

Leaves in the tops or on the outer branches of prune trees observed September 7 at Fruit Valley in Clark County were chlorotic and rolled, in some cases with brown dead edges. From 10 to 15% of the fruit had dropped from such trees. The condition of the tree was correlated with the fruit drop. Large broken limbs occurred more frequently than would be expected. Evidence of mycelium was found in these broken limbs. Armillaria is suspected but no fruiting bodies were found for definite identification. Many prune orchards of this area have seen their best days.

In the Pioneer region, from 3 to 5% of the potato plants showed rolled upper leaves, resembling current infection of leaf roll, but apparent sources of inoculum were lacking to justify this suspicion. Probably environmental factors are the cause. Most fields noted in this area would average about 7% mild mosaic. Rhizoctonia was observed ranging from a trace to 7%. Current season rugose mosaic infection of 2 to 3% was noted in one field. (See also under late blight)

In a sunflower planting, a necrosis of the tops was noted, that caused a malformation of the flower or in some cases prevented flower formation. All the plants were affected in varying degrees. The necrotic lesions extended down the stalks. The trouble was spreading to a planting across the road. The cause is undetermined, but a Cladosporium sp. is associated.

In Cowlitz County, September 8, 2 potato plantings were examined in an area where many farmers claim they could not raise this crop. One field had 30% mild mosaic, 15% rugose mosaic, 3 to 4% Rhizoctonia (not severe as yet). Another field, reported to be from certified seed, was

much better. About 3% mild mosaic and traces of Rhizoctonia (lesions not severe on roots) were noted. (See also under late blight).

The Smith-Hughes instructor is interested in getting bean culture started in this area. He was harvesting about 4 tons per acre without irrigation. The beans were free from rust and mosaic. Traces of Rhizoctonia infection were found.

Red clover, and to a much less extent alfalfa, in Lewis County, September 9, showed injury apparently due primarily to root borers. Powdery mildew (Erysiphe polygoni) was prevalent in patches on the clover but was not general. The late crop of oats in this region was badly infected with stem rust (Puccinia graminis avenae). Most of the crop was harvested.

Two peach trees in an isolated planting in Thurston County showed dieback due to Taphrina deformans, which was said to be less severe than it was last year. Winter killing of recent plantings of peach was also found in this area.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

PLANT DISEASE SURVEYS IN IDAHO

Earle C. Blodgett

I left San Fernando Saturday and spent Sunday, August 8, at Cambria. I was interested to note in a planting of primrose and calceolaria grown for seed production that Botrytis, as a blossom or pedicel blight, was causing severe damage. In addition a root rot, not determined, was killing large numbers of primrose plants.

August 16 to 21 was spent at Moscow with daily or part-of-day trips into the field near Moscow. Many wheat fields east and southeast of Moscow show a trace to 75% or more infection with dwarf bunt (Tilletia caries). Losses are considerable and an effort was made to determine how generally the disease is spread. It would appear that, so far as the local survey showed, dwarf bunt is important only in the fields east of Moscow. None was found between Moscow and Potlatch and only a trace noted near Genesee.

Black stem rust (Puccinia graminis) is of considerable importance in some fields of spring wheat particularly in the low lands.

Powdery mildew (Erysiphe polygoni) of peas was prevalent and severe, undoubtedly causing some reduction in yield and quality.

It would appear that dwarf bunt may become a serious threat to wheat growing, and also that stem rust is very prevalent and may become of economic importance. There is good evidence that this disease has been more common the past few years than formerly indicating a gradual, and in some years, a sudden increase.

On August 23 I left for southern Idaho via Lewiston, Grangeville, New Meadows to Weiser. C. W. Hungerford accompanied me. Of particular interest was the prevalence of Sclerotinia infection (S. sclerotiorum) in fields of rape grown for seed. Sclerotia were abundant in the infected stalks. Certain fields, not yet harvested, showed about 75% shattering. A trace of dwarf bunt was noted near Cottonwood on what is known as the Camas Prairie. This disease is known to be of importance there.

August 24 was spent at the Parma Horticultural Station where bacterial blight (Xanthomonas carotae) of carrot seed stocks was of particular interest. A soft watery rot of young carrots was quite prevalent, particularly where flooded by irrigation water. Fields were examined near Wilder, Homedale and Caldwell. This is in the area of extensive production of vegetable crop seed. Asters yellows (virus) on carrots and lettuce, and Sclerotinia rot of lettuce were prevalent. One mature lettuce plant showed root swellings later shown to be due to nematodes [presumably root knot].

August 25 was spent in vegetable gardens around Caldwell, visiting the vegetable dehydrator and the corn cannery at Wilder. One of the problems at the dehydrator was the presence of yellow colored potato tubers. Greened tubers also made a poor product.

The celery growers around Caldwell have been sharply reducing their acreage of celery principally because of late blight (Septoria sp.) damage. Wider spacing of rows has been of some help. A root rot is of some importance and a certain type of yellowing is very prevalent.

August 26 was spent near Homedale, Wilder and Caldwell. Potato packing plants were visited and ring rot (Corynebacterium sepedonicum) was noted to be severe in potatoes from certain fields. One case was noted where grade was impossible to secure. The use of certain practices in growing potato seed (one year from certification) is a very important problem and is one that needs immediate discussion and action.

A peach orchard near Caldwell, noted many times previously, has 4 new western-X (virus) diseased trees this year, two of these showing a sudden, severe breakdown. This grower a few years ago asked for help in regard to severe loss from Rhizopus rot in peaches. He has followed carefully a few simple precautions and besides reducing the loss to virtually nothing, he has become very enthusiastic about sanitation around the packing shed and orchard. This example is cited to illustrate what may be done in many orchards if the growers use the knowledge that is available.

August 27 was spent around Nampa in the potato sorting sheds and peach packing plants. A trace of scab (Actinomyces scabies) on Netted Gems was noted. Powdery mildew (Sphaerotheca pannosa) was rather common on peaches. A field of fall lettuce, about 60 acres, was examined and it was found that the stand and growth of plants was seriously affected by nematode injury to the roots.

August 29, Sunday, was spent en route to Gooding and several fields were examined. Curly top (virus) on summer squash was prevalent in a large garden at Hemmett. Western-X was showing on a peach tree now 4 years old. No other diseased trees are known for long distances.

August 30 was spent with the County Agent at Gooding and Wendell. Some bean root rot injury [?] was noted and in general this at present is one of the most menacing problems to bean growers in that area. In a large peach orchard Coryneum blight was extremely severe. Approximately 85% of the fruit showed lesions, and some so severe that the grade was affected. One large field of potatoes was seen in which 50% or more plants were diseased with what is called haywire (virus). The loss in yield is very great. Fusarium wilt was noted commonly.

August 31 was spent with the County Agent at Jerome. Potato ring rot and fusarium wilt were found fairly commonly. A great deal of

interest was expressed in rots of carrots during winter storage. Concern was expressed over the quality of seed used in potato planting last spring. At Twin Falls potato sorters were visited.

September 1 was spent in the most interesting development so far which was the finding of what appears to be a rather active virus disease of alfalfa. It occurs in patches and particularly along fence rows. It has not been diagnosed, but it is already of economic importance in that area. Certain potato fields showed ring rot, some severe fusarium; certain bean fields showed traces of bacterial blight and occasional mosaic.

September 2 was spent visiting one field of beans and others were "heard of" in which Sclerotinia (S. sclerotiorum) was severe. Although this disease is not general, where it occurs there is great alarm among the growers. Affected plants are chaffy; the infected areas enlarge each year and interest in the future developments is keen. In infected pods, sclerotia nearly as large as the beans are quite common. One field of beans was noted where about 85% of the plants had mosaic. A large peach orchard visited showed extensive Coryneum blight injury. Aster yellows on lettuce was common around Twin Falls and apparently was more severe along the edges of fields. A peculiar proliferation of carrot seed heads was noted.

September 3 was spent with the County Agent near Caldwell and Parma in bean fields. This area is new to bean culture, and no root rot damage was noted. A trace of red node disease was found. Lima beans are grown extensively and except for one field where a leaf rust or blotch was common, they looked healthy. This case is regarded due to soil conditions.

September 4 was spent en route to Moscow and examining many orchards. Powdery mildew was more prevalent than usual in peaches. Black end of pear was noted and severe development of western-X in peach trees was seen. In one large peach orchard a peach "mottle" tree was located and another tree bearing seriously warted peaches.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SUMMARY OF PLANT DISEASES OBSERVED IN MONTANA

Hubert A. Harris

From August 12 to 14 a preliminary survey was made in Gallatin County (Southwestern Montana). Diseases observed are as follows:

August 12: vicinity of Belgrade from Bozeman

BARLEY: Covered smut (Ustilago jensenii) -- prevalence 0.5-1% of plants infected. Stripe (Helminthosporium gramineum) -- prevalence 2-5%, severity of attack on affected plants trace to medium.

OATS: No pronounced disease was observed in any field examined. There was some sterility of spikelets (0.5-1%) due to physiological causes.

WHEAT: Most of the wheat in this vicinity was too mature to permit much recording of disease data.

Leaf rust (Puccinia rubigo-vera tritici) -- prevalence 10-15%, severity trace to 5%, in one late-maturing field.

PEAS: Most peas in this vicinity were too advanced to secure much data. In one field what was apparently bacterial blight (Pseudomonas pisi) was observed on 1 to 2% of the plants, severity ranging from slight to

medium; and root rot [cause not specified] occurred on 10 to 15% of the plants.

August 13: to Manhattan from Bozeman
ALFALFA: Leaf spot (Pseudopeziza medicaginis) -- prevalence 90-95%, severity light to medium.
Leaf blotch (Pyrenopeziza medicaginis) -- prevalence 5%, severity medium.
BARLEY: Ergot (Claviceps purpurea) -- on an occasional plant
Stripe -- 20% prevalence, severity light to heavy.
OATS: No pronounced disease in any field examined.
WHEAT: No pronounced disease in any field; crops well-matured

Vicinity of Menard
ALFALFA: Leaf spot -- 75% infection, severity trace to light
BARLEY: Stripe -- 2-5%, severity light
OATS and RYE: No pronounced disease in any field examined.
WHEAT: Most fields well matured.
Leaf rust -- prevalence 40%, severity trace to 5%, in one field

Four miles northwest of Bozeman
BARLEY: Covered smut -- 0.5-1%
Stripe -- prevalence 10%, severity trace to light

August 14: vicinity of Amsterdam
ALFALFA: Leaf blotch -- prevalence 15%, severity light
Leaf spot -- prevalence 98%, severity medium
BARLEY: Stripe -- prevalence 80%, severity light to medium
OATS: No pronounced disease in any field examined
PEAS: All peas observed in this vicinity had been harvested for seed
WHEAT: Wheat was well matured and no pronounced disease was observed in any field.

For the following 2 weeks, owing to the lateness of the season and the limiting time factor, an itinerary was planned to include the following chief points: Bozeman, east to Bigtimber (Sweetgrass County), north to Harlowton (Wheatland County), to Lewiston (Fergus County), northwest to Fort Benton (Chouteau County), northeast to Havre (Hill County, northern Montana), east to Glasgow and north to Opheim in Valley County, to Westby in extreme northeastern Montana (Sheridan County), south to Sidney (Richland County), southwest to Miles City (Custer County), and Billings (Yellowstone County in southern Montana), and west back to Bozeman. Observations are summarized as follows:

August 17: Bozeman to Moccasin sub-station
ALFALFA: Leaf spot -- prevalence 95%, severity light
BARLEY: Bacterial blight (Xanthomonas translucens f. sp. hordei) -- trace in one sub-station plot
Covered smut -- prevalence trace
WHEAT: Bunt (Tilletia) -- prevalence 1%
Stem rust (Puccinia graminis) -- prevalence trace, severity 2-5%

August 18: Moccasin to Havre sub-station
ALFALFA: Leaf blotch -- prevalence 25%, severity medium
Leaf spot -- prevalence 98%, severity medium to heavy
FLAX: Rust (Melampsora lini) -- prevalence 90%, severity medium to heavy
OATS: There were very few oats fields that had not been harvested, and no pronounced disease was observed.
WHEAT: Bunt -- prevalence, trace to 0.5%

August 19: Havre to Glasgow
ALFALFA: Leaf blotch -- prevalence 50%, severity medium
Leaf spot -- prevalence 98%, severity medium to heavy
BARLEY: Covered smut -- prevalence trace
Stripe -- prevalence 75%, severity heavy
CORN: Smut (Ustilago maydis) -- prevalence trace, severity light
FLAX: Rust -- prevalence 90%, and severity heavy
OATS: No pronounced disease observed
SUGAR BEETS: Curly top (virus) -- prevalence trace to 0.5%, severity mild to severe
WHEAT: No pronounced disease observed.

August 20: Glasgow to Wolf Point, through Opheim, Scobey
FLAX: Rust -- prevalence 75 to 98%, severity medium to very heavy
OATS and WHEAT: No pronounced disease observed

August 21: Wolf Point to Plentywood
BARLEY: Covered smut -- prevalence 0.5%
Stem rust -- in one field, prevalence 25%, severity 5%
CORN: No pronounced disease observed
FLAX: Rust -- prevalence 25-95%, severity light to heavy
OATS: No pronounced disease observed
WHEAT: Bunt -- prevalence a trace
Leaf rust -- in one field, prevalence 75 %, severity 40%
Stem rust -- in one field, prevalence 25%, severity 10%

August 23: Plentywood to Scobey
BARLEY: Covered smut -- prevalence a trace
Stem rust -- prevalence 25%, severity 10%
Stripe -- prevalence 95%, severity heavy
FLAX: Rust -- prevalence 75%, severity light to very heavy
OATS: Covered smut -- prevalence 10%
Stem rust -- prevalence 75%, severity 5-40%
WHEAT: Leaf rust-prevalence 80%, severity 5-40%
Stem rust -- prevalence 15%, severity 2-25%

August 24: Scobey to Sidney
ALFALFA: Leaf spot -- prevalence 98%, severity very heavy
BARLEY: Stem rust -- prevalence 2%, severity 5%
CORN: Smut -- prevalence a trace
FLAX: Rust -- prevalence 90%, severity heavy
OATS: Stem rust -- prevalence 80%, severity 25-40%

RYE: Ergot -- prevalence a trace, severity light
Stem rust -- prevalence 75%, severity 2-5%
SUGAR BEET: Curly top -- prevalence 0.5%, severity mild to medium
Leaf spot (Cercospora beticola) -- prevalence 95%, severity heavy
WHEAT: Stem rust -- prevalence 2%, severity 2-5%

August 25: Sidney to Miles City. Because of heavy rains only limited observations could be made.
ALFALFA: Leaf blotch -- prevalence 10%, severity heavy
Leaf spot -- prevalence 98%, severity heavy
BEAN: Common bacterial blight (Xanthomonas phaseoli) -- prevalence 75%, severity medium
CORN: Smut -- prevalence a trace
FLAX: Rust -- prevalence 50%, severity light
WHEAT: Stem rust -- prevalence 10%, severity 2-5%

August 26: Miles City to Billings. The preceding day's rains made travel on sideroads inadvisable, and fields were too wet and muddy to work in until Custer was reached. A summary of the limited data secured is as follows:
ALFALFA: Bacterial wilt (Corynebacterium insidiosum) -- 1% infection observed in one field, in association with winter injury.
Leaf spot -- prevalence 98%, severity medium to very heavy
BEAN: Bacterial halo blight -- (Pseudomonas medicaginis var. phaseolicola) -- prevalence 50%, severity medium to heavy.
Common bacterial blight -- prevalence 45%, severity medium to heavy
Mosaic (virus) -- prevalence 2%, severity marked
Rust (Uromyces phaseoli var typica) -- prevalence 75%, severity medium
OATS: Stem rust -- prevalence 15%, severity 5-40%

August 27: Billings to Bozeman.
ALFALFA: Black stem (Ascochyta imperfecta) -- prevalence 60% in one field, severity heavy
Leaf blotch -- prevalence 15%, severity medium
Leaf spot -- prevalence 90%, severity very light to heavy
BEAN: Bacterial halo blight -- prevalence 50%, severity medium
Common bacterial blight -- prevalence 75%, severity medium
Mosaic -- prevalence 2%, severity marked
Rust -- prevalence 50%, severity light
CORN: Smut -- prevalence a trace
SUGAR BEET: Curly top -- prevalence a trace, severity mild to severe

From September 9 to 11 a survey was made of diseases of apple, sour cherry, and sweet cherry in the Flathead Lake and Bitterroot areas of northwestern Montana. The following diseases were observed:

September 9: Missoula; to area along western side of Flathead Lake; to Kalispell and vicinity.
APPLE: Drought spot (non-par.) -- On 50% of the trees in one orchard, severity light to medium on 10% of the fruit.

Fire blight (Erwinia amylovora) -- Prevalence 1%, severity light
Scab (Venturia inaequalis) -- affected 100% of the trees observed; 10 to 90% of the leaves showed light to medium infection averaging 50% medium; light to heavy infection on 5 to 25% of the fruits, averaging 15% medium.

September 10: Kalispell; eastern side of Flathead Lake; to Polson
APPLE: Drought spot -- In one orchard, 25% prevalence, severity medium to heavy on 20% of the fruit.
Fire blight -- prevalence a trace, severity light
Scab -- prevalence 100%; 20 to 75% of the leaves showed light to heavy infection, averaging 50% light to medium; light to heavy infection of 5 to 50% of the fruits, averaging 15% and light to medium.
SOUR CHERRY: Leaf spot (Coccomyces hiemalis) -- prevalence 90% of the trees and 5% of the leaves infected, severity light
Powdery mildew (Podosphaera oxyacanthae) -- 2% of the leaves infected on 5% of the trees in one orchard, severity medium.
SWEET CHERRY: Leaf spot -- 25% of the trees and a trace to 1% of the leaves infected, severity light.

September 11: Polson and vicinity to Bitterroot area; to Missoula.
APPLE: Drought spot -- In one orchard, prevalence 1%, severity medium to heavy
Fire blight -- prevalence a trace, severity light
Scab -- prevalence 100%; 75% of the leaves showed medium infection; 40% of the fruits with medium infection
SOUR CHERRY: Leaf spot -- on 90% of the trees and 5% of the leaves in one orchard, severity a trace
SWEET CHERRY: Leaf spot -- prevalence a trace, severity a trace, in one orchard.
EMERGENCY PLANT DISEASE PREVENTION PROJECT

PLANT DISEASES IN WYOMING AND COLORADO

E. W. Bodine

WYOMING:

During the week ending August 29, I worked in the State of Wyoming with Dr. G. H. Starr, of the University of Wyoming.

Alfalfa -- Bacterial wilt affected from a trace to 2% of the plants in most fields where the stand is not over 3 years old.

Bean -- Bacterial halo blight was observed on a trace to 1% of the plants in some fields. In one 20-acre field of the Sure Crop variety, 80% of the plants were infected, symptoms occurring on stems, leaves, and pods.

Only a trace of rust was observed in Park County in the vicinity of Powell. In the Clark Fork district of Park County rust was rather prevalent, but damage to the crop should be slight since most plants were within one week of maturity.

In many fields inspected, from a trace to 1% of the plants were affected by white mold (Sclerotinia sclerotiorum). In one 30-acre field an estimated 5% of the plants were infected. Pods on infected plants are completely destroyed. Large sclerotia, some of them attaining the size of the bean seeds, were found on the pods, both inside and outside.

From a trace to 2% of mosaic (green and yellow types) is general in most fields.

No bean plants were found infected in the curly top areas in the Lovell and Worland districts.

Pea -- Powdery mildew (Erysiphe polygoni) was general wherever pea plants were found. In one field near Greybull, 2% of the plants were attacked by root rot (Fusarium martii var. pisi).

Potato -- (See also report under late blight).

Bacterial ring rot (Corynebacterium sepedonicum) occurred on a trace to 1% of the plants in a few fields near Riverton. In one field near Worland infection was estimated at 30%. Both vine and tuber symptoms were present.

Fusarium wilt caused by Fusarium oxysporum was found on a trace to 1% of the plants in many fields; caused by F. solani var. eumartii, on a trace to 1% in some fields. From a trace to 1% of the plants in many fields were attacked by Rhizoctonia (R. solani). A trace of black leg (Erwinia phytophthora) was observed in most fields. From 1 to 2% of mosaic occurred in all fields inspected, and trace of hay-wire (virus) was found in a few fields.

Salsify -- A few plants affected by white rust (Albugo tragopogonis) were found in Victory gardens.

Sugar Beet -- Only a few sugar beet plants were found with curly top symptoms. The resistant U. S. No. 22 variety is grown in the curly top areas.

Truck Crops -- Truck crops in general, such as tomato, pepper, eggplant, celery, carrot, and beet, were found to be in a healthy condition.

COLORADO:

Alfalfa -- Downy mildew (Peronospora trifoliorum) is general in Weld County, but damage is slight or none.

Bean -- Rust is widespread in Weld, Morgan, Lincoln, Crowley, Otero, and Pueblo Counties. Fields in Weld County were most severely affected, yields in some cases possibly being reduced from 5 to 15%. In the other areas rust will cause little to no reduction in yield.

In Montezuma and Dolores Counties, in the southwest corner of the State, only a very few plants were found to be infected by rust, no common bacterial blight was recorded and only a trace of mosaic was seen.

Onion -- In the vicinities of Rocky Ford and Pueblo, in Otero and Pueblo Counties, respectively (in the Arkansas River Valley in southern Colorado), hundreds of acres of onion plants were from 80 to 100% infected with purple blotch (Alternaria porri). In the vicinity of Swink in Otero County, many fields showed only a small percentage of the plants infected, and a similar condition was found in the vicinities of Ordway and Crowley in Crowley County (just north of Otero County). In the vicinity of North Avondale in Pueblo County, up to 50% of the plants were infected in many fields.

Infection was late this year and therefore the yield was not materially reduced. However, if onions are stored from such heavily diseased fields, it is very likely that 50% of the bulbs will become infected in storage.

Many fields show only a trace of pink root (Phoma terrestris). In one field near Rocky Ford 90 to 100% of the plants were infected, and the yield was reduced at least 75%.

Bulb rot (Fusarium vasinfectum var. zonatum) is widespread, with only a trace of infection in most fields.

Peach -- In the McElmo Canon in Montezuma County many of the peach trees are infected with the mild strains of the peach mosaic virus.

Potato -- (See also under late blight). Early blight (Alternaria solani) is general in potato fields in Weld County, 50 to 100% infection of plants being observed in many fields, and 1 to 10% in others. Damage is slight.

In the potato area in the San Luis Valley, Rio Grande County, bacterial wilt and ring rot is widespread. In some fields 5 to 6% of the plants are infected, in others only a trace of infection was found, and in many fields no infected plants were recorded.

In a 100-acre field 9 miles west of Cortez in Montezuma County, 25% of the plants were infected. In many hills all the tubers were completely decayed or showing excellent tuber symptoms of ring rot. The entire field was planted to the Cobbler variety. Other small fields in this county showed only a slight amount of infection.

Sugar Beet -- In the vicinities of Rocky Ford and Pueblo in Otero and Pueblo Counties (Arkansas River Valley), respectively, 100% of the sugar beet plants were severely affected by leaf spot. In fields around Crowley, Crdway, Manzanola, Swink, and La Junta (Crowley and Otero Counties), only a slight amount of infection was recorded.

Tomato -- A trace of fruit rot caused by Phytophthora capsici was found near Manzanola.

In the vicinities of Keenesburg and Prospect Valley in Weld County, many tomato plants were found to be infected with the ring spot type of virus reported previously. On September 5, tomato plants in this district were damaged by frost, making it quite difficult to detect the symptoms of this disease.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

PLANT DISEASE SURVEYS IN MINNESOTA AND THE DAKOTAS

Ian W. Tervet

(See also under potato late blight)

August 26 to 29: St. Paul, Minnesota to Grand Forks, North Dakota, thence through the northern part of the Red River Valley, returning to St Paul via Bemidji and Grand Rapids.

Potato -- Purple top: A purple discoloration of the leaves and stem, followed by wilting of the vines, has been common in most potato areas in Minnesota and eastern North Dakota. The cause of this purple

top is not entirely clear, for the aster yellows virus, Rhizoctonia, and Fusarium, have each been held responsible. It does not seem probable that the aster yellows virus alone is responsible since the disease is somewhat closely correlated with high soil moisture levels. The heaviest evidence of this disease was found at Grand Rapids, Minnesota, with a decreasing percentage of infected plants found further west. In the Red River Valley, an average of 2% purple top was found, generally distributed. Fields where moisture was abundant generally had a higher infection than drier fields, although low places in fields did not necessarily have heavier infection than well-drained areas.

Ring rot: In commercial fields, ring rot was found frequently, a maximum of 5% being seen in a few fields. The average infection was not above 1%.

Early blight: This disease was widely distributed in the Red River Valley. Some fields were heavily infected; most, however, were infected only lightly. The western drier areas of the Red River Valley had less early blight than other sections.

Flax -- Pasmo (Sphaerella linorum) is generally distributed in the upper Red River Valley. However, only occasional fields are severely affected, the intensity of the disease being less than farther south.

Rust is heavy only in late-planted fields of Bison, some of these fields only being in flower on August 27 to 28. Ripe fields of Bison are moderately infected, from 5 to 10% reduction in yield probably resulting. Walsh and the yellow flaxes are free from rust although occasional fields of Walsh have some rust plants. It is probable that these fields have been sown with a mixture of Walsh and a susceptible variety.

Onion -- An unidentified leaf blight of onions caused some damage at Princeton, Minnesota.

Week ending September 4: Minnesota River Valley in Minnesota.

Corn -- Smut is present in all fields examined and in some fields a high incidence of disease exists. Only a trace of stalk rot was found in some fields, but most fields are not sufficiently advanced to show much injury from this disease.

Sugar Beet -- A survey was made of the sugar beet acreage in the Minnesota River Valley. The Cercospora leaf spot is generally distributed in the sugar beet fields between Chaska and Clivia. Damage to the crop is variable, a maximum of about 10% being found in one field, and less in other fields. Some fields are not suffering any appreciable injury. Rhizoctonia root rot was found in one field, about 1% of the plants being killed by this disease.

Week ending September 12

MINNESOTA:

Sugar Beet -- Cercospora leaf spot was found in fields near Moorhead, but the attack was less severe than in southern Minnesota, damage to the yield being negligible. Northwards the disease diminished in intensity, very light infections being found in fields in the East Grand Forks area. The stand in the Red River Valley was excellent, a trace of Rhizoctonia rot being found only in a few fields. Near Mankato in the

southern sugar beet section, the stand was very poor, partly resulting from Aphanomyces, partly from Rhizoctonia. Cercospora leaf spot was heavy.

Soybean -- Bacterial pustule (Xanthomonas phaseoli var. sojense) is present on all fields examined in southern and central Minnesota, but the infection is light and damage to foliage negligible, although some loss of seed may result from pod infections. Mosaic is infrequently seen in field soybeans but is very common and frequently causing some damage in edible varieties.

Corn -- Corn smut is somewhat more prevalent than in recent years, fields between St. Paul and Moorhead and in the Red River Valley being more heavily infected than in southern Minnesota. Most of the infection has occurred in the tassel, ear infections being less than 1% on the average and galls on the lower part of the stem a trace.

Root rot and stalk rot is not very evident yet in southern Minnesota. An average of a trace of these diseases was found between Pipestone, Owatonna, and St. Paul. The stand of corn is lower than average, and more warm weather is needed for a satisfactory crop.

NORTH DAKOTA: Eastern Counties from Grand Forks to South Dakota Boundary

Corn -- Fields in Cass, Richland, and Sargent Counties, were infected with up to 15%, the average for this section being about 7%. Most of the smut galls were on the tassels, about 1% of the ears on the average being infected. A trace of stalk rot was found in a few fields. Stands are below average and many fields are late.

Wheat -- In Richland County, an uncut field of Thatcher wheat was seen; many fields of wheat have not yet been threshed because of the prevailing wet weather, and much of the grain is severely weathered.

Flax -- As with wheat, threshing has been greatly delayed, with a decided loss in quality of much of the seed.

SOUTH DAKOTA: Eastern Counties from North Dakota line to Madison

Corn -- Smut found in all fields in eastern counties with an average prevalence of about 3%, principally on the tassels, a trace of smut on the average being found on the ears.

Most fields had only a trace of stalk rot except in one area in Lake County, north of Madison, where in several fields the corn was lodged and had 15% stalk rot.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

PLANT DISEASES IN KANSAS AND NEBRASKA

Stuart M. Pady

Potato: An Undetermined Tuber Rot and Other Diseases in Nebraska -- During the week ending August 21 a survey was made of potato diseases in the Loup River area and along the Platte River in Nebraska. Special attention was given to the distribution of an apparently new tuber rot on Cobblers reported previously from Comstock. The rot was observed in

the Comstock, Arcadia, and Ord regions of the Loup Valley where losses were estimated at 1 to 2%. In the Platte River region the rot was found abundantly in both the Cozad region (in one field the loss was 10 to 15%) and the Gibbon area. The cause of the disease has not yet been determined. The rot begins as brownish water-soaked lesions on the surface, blistered as if frozen, a few mm. in extent or larger, often most numerous at the stem end. The tissues beneath become discolored, then decay. The outer diseased part becomes darker and forms a shell; the inner tissues disintegrate into a white rubbery or gummy material with a foul fish-like odor. When dug and dried, diseased tissues become black and hard.

Early blight was abundant in one field in this region. Scab (Actinomyces scabies) was present in some fields. No Rhizoctonia was found in any of the localities visited.

Soybean -- With John C. Miller, extension pathologist, and Dr. E. D. Hansing of the Department of Botany and Plant Pathology, a 3 1/2-day trip was made through 13 eastern counties of Kansas and 48 soybean fields were examined. Two Cooperative Soybean Variety Test Plots in Butler and Linn Counties and the soybean plots at the Agronomy Farm, Manhattan, were also visited. Bacterial pustule was found wherever soybeans were grown, even in fields where they are being grown for the first time. The amount varied from a trace to heavy infections. The late planted fields of Southeast Kansas in general have the smallest amount of disease. The 2 free fields found were both late planted and the plants were small, yet a field adjacent to one of them, with larger plants, had abundant infection. Although the disease is widely distributed, drouth conditions have probably prevented severe losses. In 14 fields a small amount of spotting was found on the pods and stems. Mosaic was present in small amounts in a few fields. The varieties Dunfield, Illini, Chief, Hongkong, A.K., in the Test Plots were all infected and did not show any uniformity as to the amount of infection. Forty additional varieties at the Agronomy Farm were also found to be susceptible to pustule, ranging from light to heavy infections.

(August 31 to September 3)

From September 6 to 10 a survey was made of soybean and corn diseases in the 5 eastern tiers of counties in Nebraska. In 27 fields in 9 counties bacterial pustule was the outstanding disease of soybeans, being found in all but one field and ranging in amount from slight to heavy. The disease is most abundant in the early planted fields. Although causing some defoliation, bacterial pustule does not appear to be causing extensive damage since weather conditions have not been favorable for further spread and development of this disease

Pod and stem spotting are present in small amounts in some fields. The cause of these troubles has not yet been determined. Pod spotting appears to prevent normal filling out of the pod and causes it to drop off prematurely. The spots are black, irregular, and slightly sunken. Stem spotting does not make its appearance until the plant begins to mature. The spots are small, somewhat elliptical, pale brown, and slightly depressed.

Mosaic was present in 5 of the fields but usually not more than 1%, except in one late planted field which had 15%.

Corn -- In a 4-day trip through 9 counties of Northeast Kansas and 5 counties in Southeast Nebraska, a survey was made of the bacterial leaf spot of corn recently found in this area (PDR 27, September 1 issue, p. 338). Out of 64 fields examined, leaf spot was found in 20 cases. At Eudora, Kansas, where the disease was first collected in July, about 50% of the plants in one part of the field are infected, but the amount is less in other parts of the field and the crop does not show much injury. This is a seed-producing block of US 13. At Sabetha, Kansas, in a seed-producing block of Jewett hybrids, the percentage of infection ranged from 40 to 60%. In all of the other fields the amount of infection was much less, ranging from a trace to 10%. In several cases top rot was found associated with the leaf spotting. The damage does not appear to be severe, due probably to unfavorable weather conditions.

Charcoal rot (Sclerotium bataticola) was found in one field. (August 23 to 28)

Seventy-seven fields of corn in 26 of the northeastern and central counties in Nebraska were surveyed from September 6 to 10. Corn smut was found in practically every field, occurring on approximately 1 to 2% of the plants; one field was noted in which the percentage of infection was about 50%. Rust (Puccinia sorghi) was found only occasionally on a few plants in a few fields.

Bacterial leaf spot (undet.) was found in 6 fields ranging in amount from a trace to 1% in Otoe, Cass, Washington, and Merrick Counties. In an earlier survey it was found twice in Johnson County and 4 times in Richardson County, making a total of 12 localities in 6 counties.

In the eastern counties the corn is still green and in general is in good condition, while in the adjacent counties to the west many fields show burning and premature ripening. In such fields charcoal rot (Sclerotium bataticola) is present. It was found in 22 fields in the following counties: Knox (2), Antelope (1), Pierce (2), Madison (5), Stanton (1), Platte (1), Merrick (4), Hall (3), Adams (1), Clay (1), Fillmore (1). In many green fields, especially in the irrigated valleys there are brown patches where the plants have ripened prematurely and in such areas charcoal rot occurs up to 50%. Most of the infected plants are broken over.

Corn root rot was found in small amounts in 6 fields. Stalk rots were found in 4 fields; in one field near Neligh over 50% of the plants in 2 areas were completely rotted away, while the remainder showed various degrees of rotting in the crown.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

SURVEYS IN IOWA AND MISSOURI

Theodore W. Bretz

MISSOURI:

Observations were made during the week ending August 28 on the diseases of some of the principal crops in the following counties - Boone, Cape Girardeau, Mississippi, New Madrid, Pemiscot, Dunklin and in the vicinity of Mt. Grove, Wright county, Missouri.

Apples -- Scab (Venturia inequalis) in general is not severe, infection ranging from a trace to 5% on fruit and moderate on foliage. One commercial orchard in the Dunklin County fruit area, however, showed 100% fruit and foliage infection, even though sprayed. Bitter rot (Glomerella cingulata) apparently is somewhat more of a problem this season than is usually the case. Fruit infection ranges from a trace to 5%, averaging 1 to 2% in most orchards. As much as 50% of the fruit in the Dunklin County orchard cited showed bitter rot lesions. Moderate to heavy foliage infection of cedar-apple rust (Gymnosporangium juniperi-virginianae), but no noticeable fruit infection, was noted. From a trace to 1 to 2% of black rot (Physalospora obtusa) fruit infection was general in most orchards. Blotch (Phyllosticta solitaria) was of noticeable importance in only one orchard, in which approximately 20% fruit infection was evident. In Dunklin County, frost injury was evident, an average of 6 to 8% of the fruit showing disfiguration.

Cherries -- Leaf spot (Coccomyces hiemalis) responsible for severe defoliation and apparent decline in vigor of trees in the Mt. Grove area.

Grapes -- Black rot (Guignardia bidwellii) was general in all plantings inspected. Both the foliage and the fruit were infected. An average of from 5 to 15% of the bunches show from 3 to 75% of the berries affected, probably accounting for an approximate 6 to 10% reduction in yield.

Pears -- Fire blight (Erwinia amylovora) is responsible for extensive damage to trees in the Mountain Grove area.

Plums -- Moderate to severe foliage and fruit infection from bacterial spot (Xanthomonas pruni) was observed. In one orchard the fruit infection was generally followed by brown rot (Monilinia fructicola) decay.

Soybeans -- Bacterial blight (Pseudomonas glycinea) was prevalent in the plantings inspected in every county visited. The degree of infection and the extent of damage was variable. The most severe damage was noted in the early planted fields. About one-third of these early fields showed from 25 to 60% of the foliage affected and accounting for an approximate 8 to 10% defoliation. In the southeastern portion of the State, many fields were in poor condition and showed as much as 40 to 60% defoliation, due probably to the combined effect of drought, bacterial blight, and insects. Late plantings show noticeably less infection, the lower leaves only being affected. One plant in a single field was suspected of having mosaic. One field in Dunklin County showed an estimated 3 to 5% of the plants dead as a result of charcoal rot (Sclerotium bataticola) infection.

Cotton -- Cotton "rust" (potash deficiency) was general but irregularly distributed through the cotton acreage in southeastern Missouri. It was more noticeable on the lighter, sandy soils than on the heavier soils. The "rust spots" varied in extent in different fields, involving from 5% to as much as 60% of the area of individual fields. Wilt (Fusarium vasinfectum) is general throughout the area but no instances of severe or extensive damage was noted.

Tomato -- On August 30 and 31, commercial tomato acreages and fruit orchards in Stone, Barry and Lawrence Counties in southwestern Missouri and tomato acreages in Lafayette County in the west-central part of the State, were visited.

Tomatoes -- In the southwestern Missouri counties, the hot, dry weather which had prevailed for several weeks was causing extensive damage. In general, the dry weather appeared to be holding the tomato diseases in check. The plants showed 25 to 40% defoliation. Heavy infection of the older leaves with Septoria leaf spot (S. lycopersici) probably accounted for much of the defoliation. The younger foliage comprising the upper third of the plant was noticeably free of infection. On an average, 8 to 10% of the fruits showed sun-scald (in a few instances as much as 20% of the fruit was affected), due to the lack of foliage to protect the fruits from the extreme heat. Soil rot (Rhizoctonia solani) was of minor importance, affecting only a trace of the fruits. Approximately 3 to 5% of the fruits showed various types of secondary decay following insect injuries, growth cracks, and mechanical injuries. Fusarium wilt (F. bulbigenum var. lycopersici) of tomatoes was found in about 1/3 of the fields examined in Lafayette County, ranging in individual plantings from a trace to 100% killing of the plants. Several fields showed from 30 to 50% of the plants killed as a result of wilt. So far as is known, all fields showing Fusarium wilt were planted to southern-grown transplants, although other fields also containing southern-grown plants showed no wilt infection. Bacterial spot (Xanthomonas vesicatoria) fruit infection was noted in about half of the fields, affecting from 5 to 30% of the fruits set. One plant in a planting of southern-grown transplants showed severe root knot nematode infection (Heterodera marioni).

Apples -- Diseases of apple likewise seem to have been held in check by the hot, dry weather. There was a moderate amount of apple scab infection of the foliage, but only a trace of fruit infection. A trace of bitter rot on both foliage and fruit was noted, and from 1 to 2% of the fruit showed black rot infection.

Grapes -- Black rot was general in all plantings inspected, both on the foliage and fruit. The extent of fruit infection varied, ranging from 5 to 30% of the berries affected, averaging about 10 to 15% reduction in yield.

IOWA:

On September 7, 8, 9, and 10 a trip was made from Ames to the northeastern corner of Iowa, and return, for the purpose of making observations on the diseases of soybeans before frost. Observations were also made on the incidence of corn smut and corn leaf diseases, as well as the diseases of tomatoes in the commercial plantings in the vicinity of Marshalltown, and cabbage in the vicinity of St. Ansgar. Marshall, Tama, Blackhawk, Bremer, Clayton, Allamakee, Winneshiek, Howard, Mitchell, Cerro Gordo, Franklin and Hardin Counties were included in this survey.

Soybeans -- Approximately 50% of the fields were showing distinct signs of maturity: the vines were yellow, generally defoliated and the pods were well filled and drying. In the remainder of the fields, which consisted of late plantings or later maturing varieties, the vines were, in general, still green. Throughout the area, bacterial blight and bacterial pustule were prevalent. Depending upon the stage of development of the plants, from 15% to 75% of the foliage was

infected in the late and early plantings, respectively. From 3 to 50%, average about 15%, of the functional leaf area was involved. Spotting of the stems and pods was also general. Approximately one-third of the plantings examined showed the presence of pod and stem blight (Diaporthe sojae). The extent of the damage was variable, but in general accounted for an estimated 1 to 2% killing of the stand for the entire area. One field in Blackhawk County showed an estimated 35% of the stand dead, the plants showing typical stem and pod blight symptoms. In another field in Allamakee County an estimated 20% of the plants were affected. Two fields, one in Mitchell, the other in Fayette County, were observed in which mosaic was prevalent. In the former, mosaic was general throughout the field and the vine development and pod set was reduced an estimated 50%, as compared with a non-mosaic-infected field directly across the road. The other field showed an estimated 20% of the plants with mosaic symptoms, but no material reduction in size or pod set was noted.

Corn -- Except for the usual purple sheath spots, the foliage appeared free from infection. An estimated 1 to 2% smut infection of the ears was noted and 2 to 3% of the plants were prematurely dead, the cause not determined.

Tomatoes -- In the tomato plantings near Marshalltown, Septoria leaf spot was prevalent in all fields. The early plantings were most severely affected, showing as much as 75% of the foliage infected and as much as 50% defoliation. In these plantings, however, infection apparently became severe relatively late, for the vines showed a heavy fruit set and yield. In the later plantings, 15 to 25% of the foliage was infected and an estimated 5% defoliation was evident. For the entire area, probably 20% defoliation had occurred. Early blight (Alternaria solani) lesions on the foliage were evident in about 50% of the fields, affecting 5 to 15% of the leaves. In fields showing heavy defoliation, 10 to 25% of the fruits showed sun-scald. Bacterial spot lesions on the fruit were prevalent in all fields, ranging from a trace to 25%, averaging 3 to 5% for the area. Anthracnose (Colletotrichum phomoides) was noted, affecting less than 1% of the ripening fruits. From 5 to 10% of the fruits showed secondary rots following insect injuries, growth cracks, etc.

Cabbage -- In the vicinity of St. Ansgar, the cabbage fields visited were noticeably free from disease. Less than 1% of the plants showed black rot (Xanthomonas campestris) lesions along the margins of the outer leaves. From 1 to 2% of the heads showed the outer leaves with black spot (Alternaria brassicae) [A. circinans, see PDR, September 1, p. 317] lesions.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

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POTATO LATE BLIGHT

Mean Temperature in Relation to Potato Late Blight Spread

Favorable (Up to 75° F.)	Unfavorable (Above 75° F.)	Change from Preceding week
Week ending August 31:		
New England, New York		Decrease
New Jersey		Increase
Pennsylvania		Increase in east; decrease in west
West Virginia		Increase
Ohio		Increase in south; decrease in north
Northern Indiana, northern Illinois	Southern Indiana, central and southern Illinois	Increase
Michigan		Decrease
Wisconsin		Decrease in north, same in south
Minnesota		Decrease
Northern Iowa	Southern Iowa, Nebraska except northern	Increase
Northern Nebraska		
North and South Dakota, Colorado		Decrease
Week ending September 7:		
New England, New York, New Jersey, eastern West Virginia, northern Ohio, northern Indiana, northern Illinois, Michigan	Pennsylvania, western West Virginia, southern Ohio, Indiana except north	Increase

Favorable (Up to 75° F.)	Unfavorable (Above 75° F.)	Change from Preceding week
Central Illinois		Decrease
Wisconsin		Increase in east, decrease in west
Iowa, Nebraska, South Dakota, North Dakota, Colorado		Decrease
Week ending September 14:		
Below 75 in all areas included in these summaries. Below the low favorable limit of about 66° in many northern and western areas: northern New England, West Virginia, Lake region, north Iowa, the Dakotas		General decrease

Following are the reports received:

MASSACHUSETTS: Late blight reached its peak in the Connecticut Valley area about the middle of August according to Dr. O. C. Boyd. Since then the weather has not been particularly favorable for rapid development and well sprayed fields have not suffered seriously.

On the ridge areas of western Massachusetts, late blight is now at peak development. It was found in fields in Windsor, Cheshire, Pittsfield, Mt. Washington, Greenfield, and Charlemont. Prevalence is general, and severity depends almost entirely upon the number and thoroughness of spray applications. It was found on Cobblers, Katahdins, Chippewas, Green Mountains, and Sebagos. One of the worst cases noted this year was found in Cheshire at an elevation of about 1250 feet in a field that had had only 3 rather poorly applied sprays. This field was planted to Cobblers, Green Mountains, Chippewas, and Sebagos. The Cobblers escaped with least loss because of early maturity. The susceptibility of Sebago was striking. The tops were as heavily infected as adjacent Green Mountain plants, and were dying down with the actively sporulating fungus, and the tubers were already badly rotted by the late blight organism. (Robert C. Cassell, Emergency Plant Disease Prevention Project, September 6.)

NEW YORK: (August 31) Late blight was noted in Madison, Oneida, and Schoharié Counties. The disease had not previously been reported this year from Schoharie County. Near Waterville in Madison and Middleburg

in Schoharie, the disease was severe (prevalence 100% and plants dead or dying); elsewhere noted there was sparsely scattered infection.

On Long Island in the Nassau-Suffolk area potato vines have matured for the most part and even though late blight was reported earlier it has not caused damage in this area. That the causal fungus is rather widely distributed is indicated by the presence of its fruiting structures on green plants examined in widely separated fields.

The following information was contributed by plant pathologists of the Cornell and Geneva Experiment Stations. The names of the contributors are noted:

Fields of Katahdin potatoes under certification in northern Cayuga County showed late blight prevalence up to 100% of the plants. The foliage of plants in these fields was still quite green so that with favorable weather the disease can become very destructive. Considerable tuber rot due to the late blight fungus was noted in one of the fields visited.--K. H. Fernow and J. N. Niederhauser, September 13

In Cortland County, the disease was very slight in fields under certification--Fernow and Niederhauser, September 13; but near Richford, in the same county, it was severe on plants of the Green Mountain variety.--S. G. Younkin, September 6

In Clinton County, in eastern New York, the disease has become very destructive in home gardens; in many gardens the potato tops are completely dead. Commercial growers have had difficulty in controlling the disease and some have not been at all successful.--A.B. Burrell, August 28

In Genesee County in northwestern New York, the disease is especially destructive to potatoes grown on muckland. More than 75% of the plants in at least 80% of the fields are affected. The disease is present to the extent of a trace in 75% of the upland potato fields and severe in not more than 5%.--Chas. Thomas, September 17

In Onondaga County (north central New York), all plants in 2 fields visited were killed by the late blight fungus. These plants had been sprayed not more than twice. Earlaine and Rural varieties generally were destructively affected while Sebago exhibited much less infection. --Fernow and Niederhauser, September 13

Late blight lesions were present on most of the plants in fields visited in the southwestern part of Madison County near Georgetown. --F. M. Blodgett, September 10

In Steuben County (south central New York) many fields of Katahdin and Rural exhibited late blight up to 100% of the plants and many of these plants were rapidly dying. Considerable infection was noted in Sebago and Sequoia potatoes but these varieties appeared to have suffered much less than Katahdins and Rurals.--S. G. Younkin, September 14

Late blight appears generally distributed in Tompkins County and in the vicinity of Jacksonville the disease was found to be severe in some fields.--Fernow and Niederhauser, September 13

In an earlier report it was noted that the late blight disease is widely distributed in New York State and that considerable damage had been done in certain localities. The above recent reports from counties distributed well over the State show that the disease has now

become destructive in potato fields over a wide area and the loss is already considerable. (L. J. Tyler, Emergency Plant Disease Prevention Project.)

NEW JERSEY: At Deerfield I visited a grading and packing shed that was being used by a grower whose farms are at Hammonton. Late blight was severe on the Chippewa variety. In grading 80 bags (8000 lbs.), 7 1/2 bushels had been picked out because of late blight tuber rot. This represents about 6% of tuber rot. On examining the fields at Hammonton I found that about 25% of the total crop of Chippewa was left in the field because the tubers were affected with late blight rot. Actual counts of tubers as they rolled over the grader gave the following figures for late blight rot: 5, 12, 13, 9, 13, or an average of 10 tubers per bushel basket.

Green Mountain growing adjacent to Chippewa and on a slight slope were practically free, while Katahdin on bottom land showed only slight late blight tuber rot. The yield of the crop appears about 2/3 of normal. (E. A. Walker, Emergency Plant Disease Prevention Project, August 21).

TENNESSEE: Late blight was general over a 3-acre field of Green Mountain potatoes on the farm of the Pressmen's Home in Hawkins County. In the most severely affected areas 50% or more of the foliage was killed. About a hundred yards away were several rows of potatoes almost completely defoliated by late blight. Next to these were several rows of sweetpotatoes. Next to the sweetpotatoes were several rows of tomatoes with late blight, which was very severe in one area in which the fruits also were infected. The farm superintendent stated that he had seen late blight of potatoes only one other time, 3 years ago, in some 25 years. (R. A. Hyre, Emergency Plant Disease Prevention Project, September 11).

OHIO: Near McGuffy, a planting of late potatoes was showing a light attack of late blight. At Wooster, in a test plot of a large number of varieties, very little late blight could be found. (M. R. Harris, Emergency Plant Disease Prevention Project, September 4).

INDIANA: From August 24 to 27 a survey was made in northwestern Indiana. In this section of the State there are large areas of muck soil in the vicinity of Newland, North Judson, and LaPorte. During the week Dr. C. T. Gregory found potatoes infected with late blight in a limited area of a field in Allen County, and slight infection over one field and severe infection over a second field in Kosciusko County. This latter field was unsprayed. (R. C. Baines, Emergency Plant Disease Prevention Project).

ILLINOIS: From September 6 to 10 a survey was made in a circuit around northern Illinois, in the company of Dr. M. B. Linn of the Illinois Experiment Station. A small garden planting of potatoes near Freeport was infected severely with late blight. In 2 half-acre plantings in which certified seed was used a trace of the disease was found. The foliage of these plantings was green and showed slight hopperburn.

Late blight was found to be present on the occasional green foliage scattered over a 40-acre field of Irish Cobbler and Chippewa potatoes on muck soil near Morrison. The grower mentioned that the tops had died in 3 to 4 days, and in view of the abundance of late blight found, it appears that this disease was at least partially involved in the sudden dying of the tops. The late blight did not appear to have reduced the yield as 5 to 6 marketable tubers were produced per hill. (R. C. Baines, Emergency Plant Disease Prevention Project).

MICHIGAN: (September 11) Many fields in southwestern Michigan were examined during the past week. In all small unsprayed plantings, a combination of early blight and late blight had killed most of the plants. Commercial plantings were sprayed and control of early blight was practically complete. Late blight was beginning to show up and was found a few miles north of Grand Rapids in a well-sprayed field. (M. A. Harris, Emergency Plant Disease Prevention Project).

WISCONSIN: (August 28) This week an inspection tour was taken in company with Professor J. W. Brann of the Department of Plant Pathology, to Columbia, Green Lake, Waushara, Portage, Marathon, Langlade, Oneida, Lincoln, Adams, and Sauk Counties. Precipitation and cool temperature favored development of late blight especially from August 26 to 28 inclusive. Late blight was first observed on this trip on August 26 near Galloway in Marathon County. Late blight was also found in Langlade and Oneida Counties. In well-sprayed fields the blight was present in scattering locations and in very small amounts. The disease was present and active and ready to become destructive when conditions permitted. The cool moist weather was quite favorable, especially the last half of the week, but where copper fungicides had been applied the blight was held in check. The better growers were applying copper fungicides one to 2 times a week. In unsprayed fields in Oneida County considerable blight damage was observed in low spots.

(September 11) This week inspection of potato fields was made in Bayfield, Ashland, Sawyer, Washburn, Burnett, Polk, Rusk, Price, and Taylor Counties. Much stormy weather was encountered and conditions of moisture and temperature were quite favorable for development of potato late blight this week. Late blight was observed in many fields and in some severe damage occurred in large spots or throughout the fields. Late blight tuber rot was found in several fields being dug. (Edwin E. Honey, Emergency Plant Disease Prevention Project).

MINNESOTA AND THE DAKOTAS: (September 13) Digging of potatoes in Codington and Clark Counties, South Dakota, has begun. Late blight has not been heavy on the vines, and tubers examined at grading and in warehouses were free from late blight rot. The only rotted tubers found were in unsprayed small plots, commercial fields being clean.

Late blight was general between Fargo and Grand Forks in eastern North Dakota but no tuber rot was seen in fields being dug.

In the Red River Valley in Minnesota late blight is widespread; however, tuber rot was not observed in any of the fields being dug there, but infected tubers were found in fields near St. Paul. (Ian M. Tervet, Emergency Plant Disease Prevention Project).

NEBRASKA: During the week ending August 21 a survey was made of potato diseases in the Loup River area and along the Platte River. Late blight is present in a few fields in the Burwell region but is not spreading. (Stuart M. Pady, Emergency Plant Disease Prevention Project).

COLORADO: (September 6) Late blight was first found on August 31 in Weld County by Dr. Lawrence Schaal, U. S. Department of Agriculture, Greeley. On September 1 Mr. W. J. Henderson of Colorado State College and I found late blight near Windsor in Weld County. Practically all potato fields in the vicinity of Windsor are infected with the late blight fungus. In some fields 50% of the plants are infected, while in others from a trace to 2% was recorded. In several fields small to large patches of infection were found. Plants in such patches are practically defoliated and stem lesions are very prevalent. Varieties grown in this area are Bliss Triumph, Cobbler, and Pawnee.

Growers in this region stated that there had been no rains, but on the morning of August 28 there was heavy fog, which persisted several hours longer in low areas than on higher land. Infection foci in all fields in this area were in the lower portions of the fields. Most growers are now giving the last irrigation; however, many growers are applying control measures for late blight first.

On September 4, the area was reinspected to determine the extent of further spread. It appeared that new infections were only slight during the 2-day interval.

In 1942, according to State and Federal officials, in many fields only a small percentage of plants showed leaf and stem lesions, but when harvested up to 50% of the tubers were infected. Therefore, in Colorado, pathologists of the Experiment Station are suggesting that along with spraying and dusting with copper compounds on the foliage copper sulfate crystals be added to the irrigation water to prevent spread down the row to the tubers.

On September 2, 3, and 4, surveys were conducted throughout Weld County with Experiment Station workers. Late blight has been found to date in the vicinities of Ault, Eaton, Galeton, Greeley, Kersey, Platteville, and Windsor. In each locality at least one potato field with heavy late blight infection was found. In such fields, small to large patches of infection, with general spread over the entire field, were noted. In a 15-acre Cobbler field near Kersey, 100% of the plants were infected. Many plants were defoliated and stem lesions were extremely abundant. No tuber infection was noted. As already stated, infection foci are located in the lower portions of the fields. Throughout the entire area inspected, many fields on higher land showed only a trace of plants infected. In these fields only leaf lesions were noted.

Damage for Weld County at present is ranging from slight to moderate. If weather conditions become more favorable and late irrigations are applied where infection is present, the late potato crop in Weld County may become seriously damaged.

(September 14) Late blight was found in Morgan County near Wiggins, on September 8. Only a slight amount of infection was recorded in a few fields. No late blight was found in the late potato area of Ft. Morgan and Brush in Morgan County. In Rio Grande County a heavy frost had killed most of the vines, making it impossible to detect late blight symptoms. (E. W. Bodine, Emergency Plant Disease Prevention Project).

TWO CORRECTIONS

SPELLING OF PEACH VARIETAL NAMES: John T. Bregger, Associate Secretary of the American Pomological Society and Member of the Society's Nomenclature Committee, writes to call attention to the correct spelling of the names of several peach varieties listed on page 293 of the August 15 issue. According to both the spelling used by the originator of the varieties and the Code of Nomenclature set up by the American Pomological Society, the following varietal names should be spelled as one word: Sunhigh; Summercrest, Halehaven, and Goldeneast

TOBACCO DOWNY MILDEW IN VIRGINIA: Dr. Wilbert A. Jenkins calls attention to an important omission in his report in the preceding issue: "An omission of a portion of a sentence in the paper tends to change the meaning of the remainder of the discussion. In paragraph two of the first page (page 298), the sentence beginning, On this basis . . . , should read: 'On this basis, and for the purposes of discussion, the crops which were transplanted to the field between May 10 and May 25, or earlier, are classed as early crops; whereas those transplanted to the field after May 25 are to be classed as late crops.' I have underlined those portions of the original sentence that were omitted."

Please make this correction in your copy.

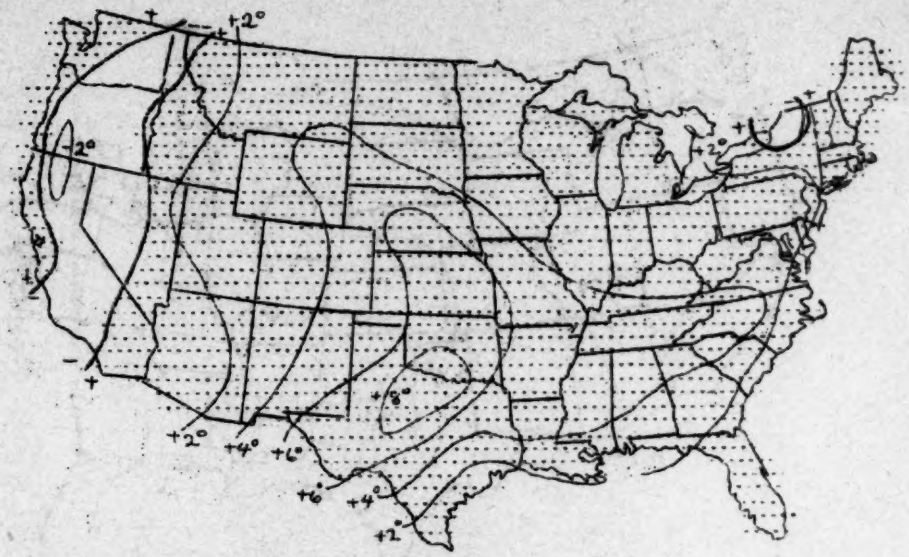
AUGUST WEATHER AND SUMMER WEATHER

(From the U. S. Department of Commerce Weather Bureau, Weekly Weather and Crop Bulletin for the week ending September 7, 1943).

AUGUST WEATHER: The month of August 1943, was characterized by abnormal warmth rather generally over the eastern two-thirds of the country and by marked deficiencies in rainfall in large areas. Figure 1 shows that the monthly mean temperatures were from 4° to 8° above normal over a large midwestern and southwestern section, but they were near normal in the extreme South and in northern States from New England westward to the northern Plains.

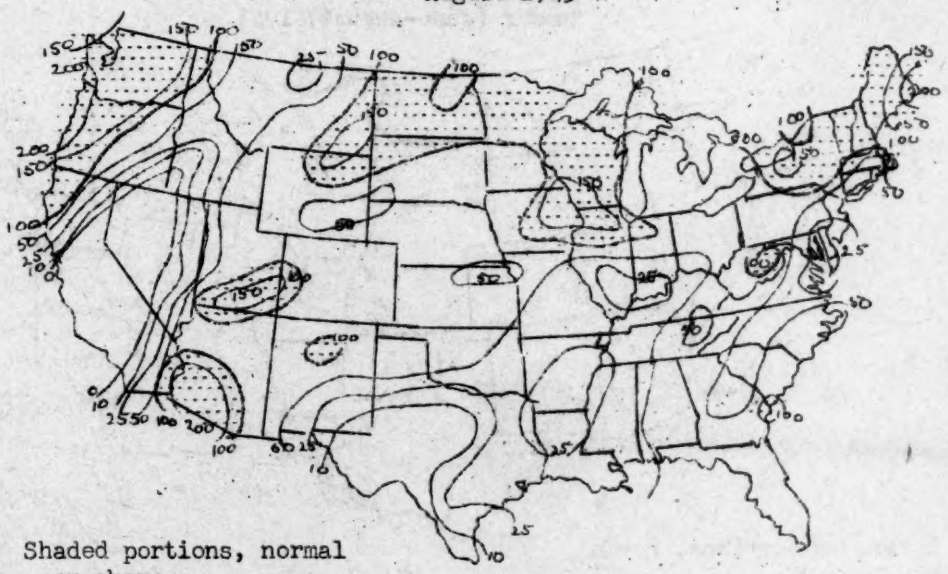
There was more than normal rainfall in much of the Northeast, the western Lake region, the upper Mississippi Valley, north-central districts and the Pacific Northwest. On the other hand, the middle Atlantic area and a large southwestern section were extremely dry, with many stations reporting less than 25 percent of normal rainfall. See Figure 2.

THE SUMMER OF 1943: Figure 3 shows that the average temperature for the summer, June-August, was above normal in all sections of the country, except parts of the far West. In considerable areas, especially the middle Atlantic States and a large south-central section, it was one of the warmest summers of record. Figure 4 shows that for the season as a whole rainfall was decidedly irregular. The most important distributions include rather generous totals in the more northern States, and a decided dryness in the middle Atlantic area and much of the South. A considerable south-central section had less than half the normal rainfall for the season.



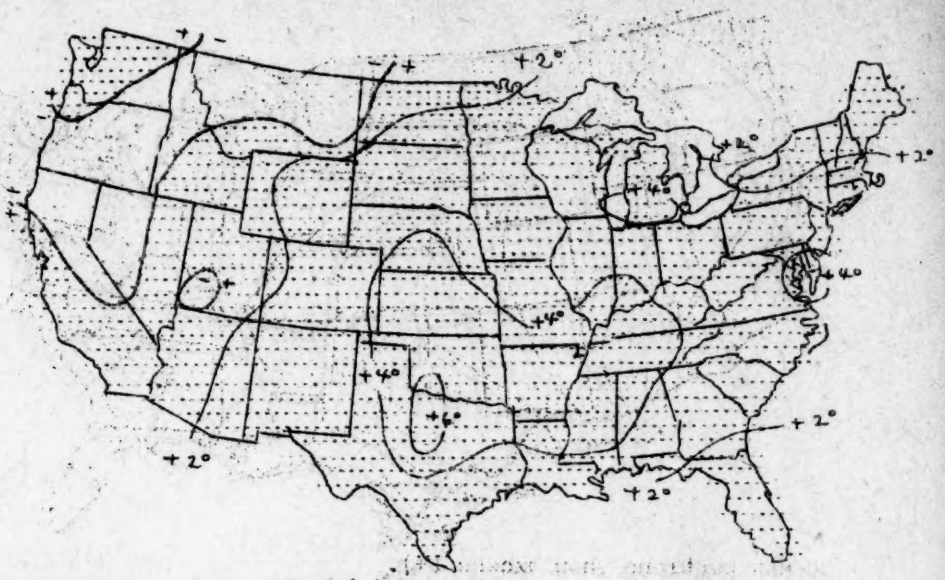
Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Fig. 1. Departure of Mean Temperature from Normal, August 1943



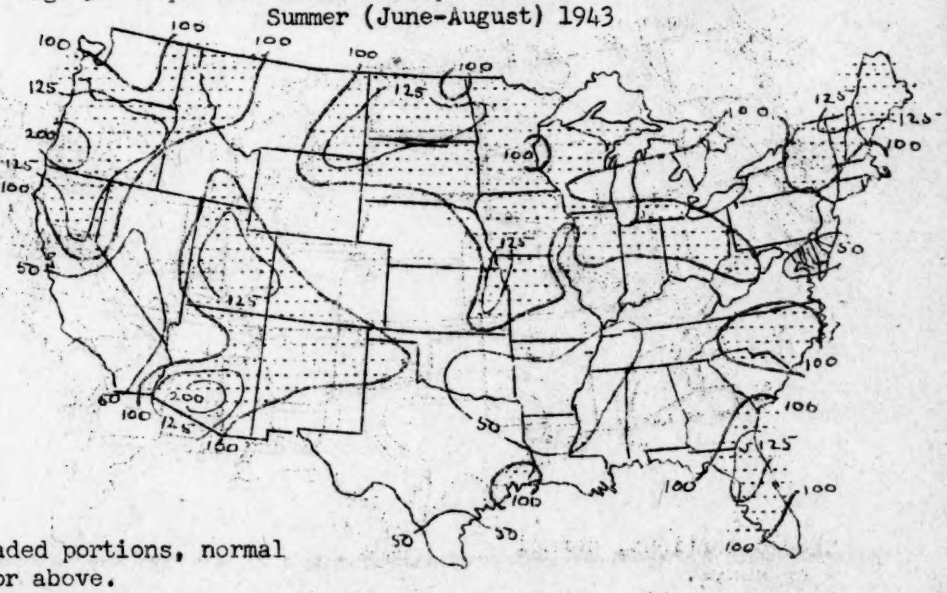
Shaded portions, normal or above.
Unshaded portions, below normal.
Lines show percentage of normal.

Fig. 2. Percentage of Normal Precipitation, August 1943



Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Fig. 3. Departure of Mean Temperature from the Normal for the Summer (June-August) 1943



Shaded portions, normal or above.
Unshaded portions, below normal.
Lines show percentage of normal.

Fig. 4. Percentage of Normal Precipitation for the Summer (June-August) 1943